ALTERNATE TRIAGE, TREATMENT AND TRANSPORT GUIDELINES FOR PANDEMIC INFLUENZA

Bureau of Emergency Medical Services and Trauma System

Arizona Department of Health Services
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Approved by the Medical Direction Commission 1/20/2011

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PURPOSE AND SCOPE

Arizona recognizes that emergency medical services (EMS) may be overwhelmed during an influenza pandemic and has developed, with the assistance of numerous clinical and operational experts, this Alternate Triage, Treatment and Transport Guideline (ATTTG) document as a resource for EMS providers during an influenza pandemic and/or a public health emergency declared by the Governor of Arizona. It is intended to provide a framework for Arizona's statewide EMS system in order to optimize the delivery of emergency care and 9-1-1 services when resources are limited or overloaded during a public health emergency related to pandemic influenza.

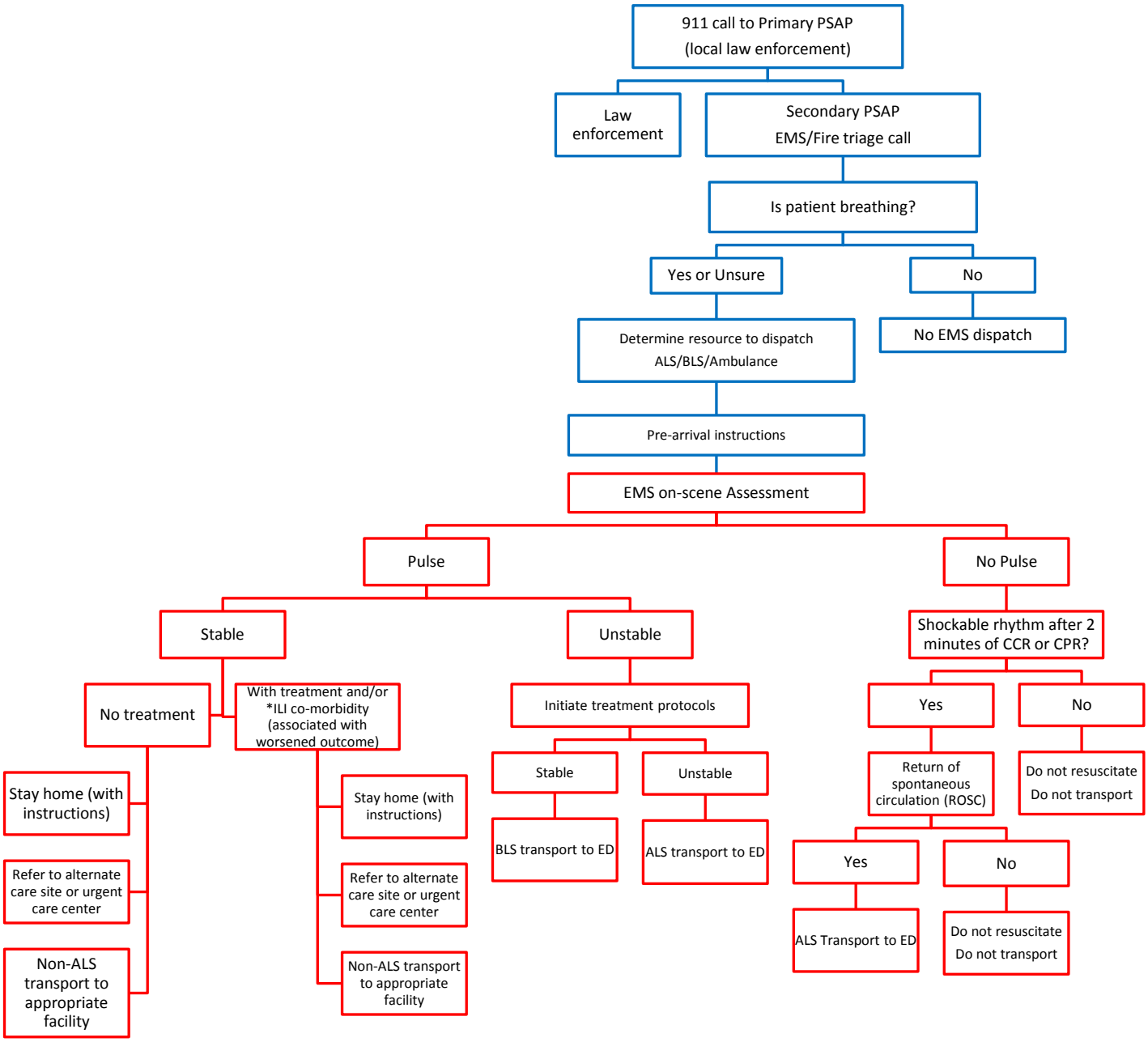
DISCLAIMER

These guidelines are designed to be a resource document for use by physicians serving as Medical Direction Authorities for the administrative, organizational and on-line medical direction of pre-hospital EMS personnel during an influenza pandemic and a public health emergency declared by the Governor of Arizona. It is recognized that variations from the guidelines contained within are acceptable, depending on the individual circumstances of the involved areas and organizations.

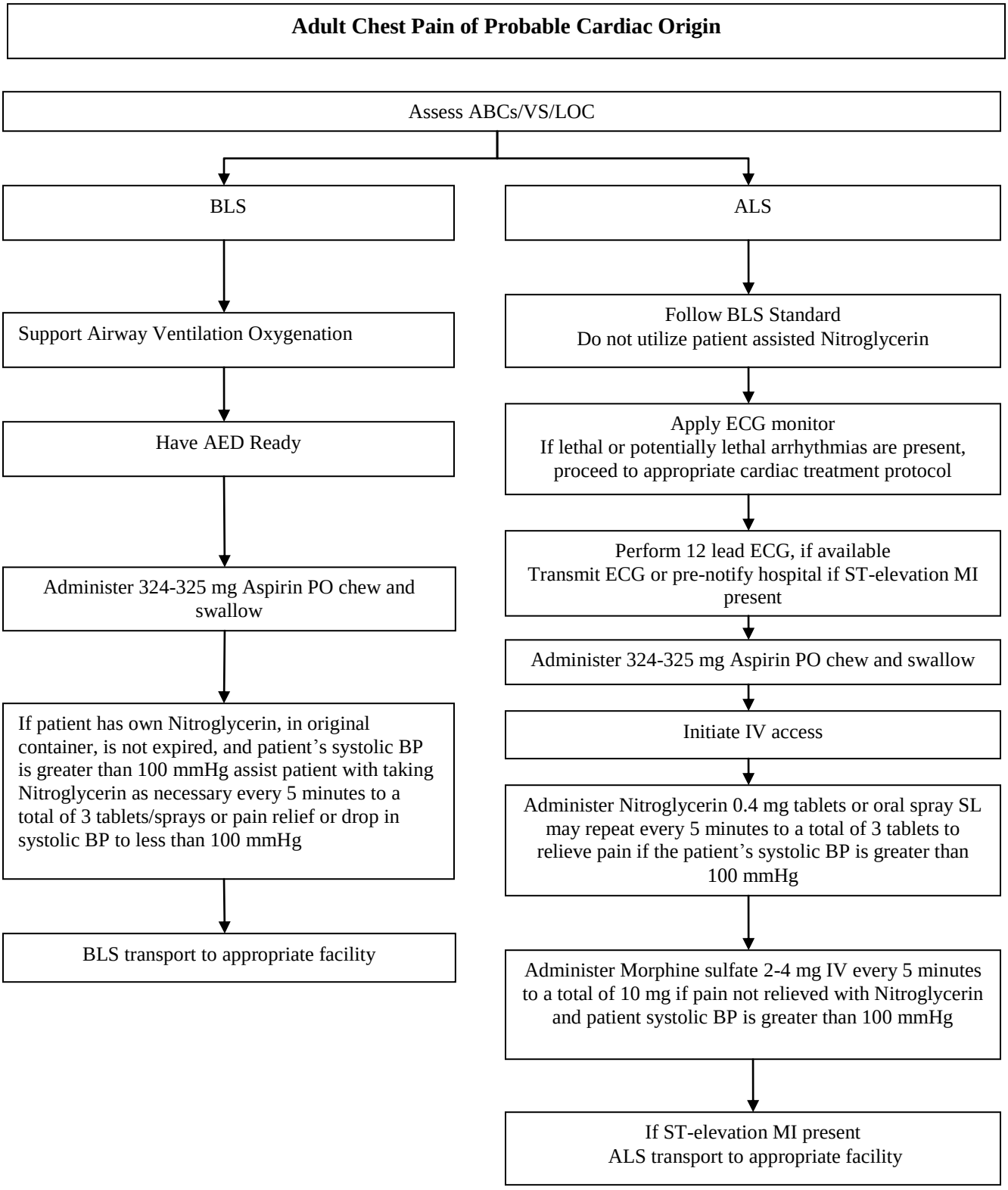
By Arizona Statute and Rule, all advanced life support pre-hospital EMS personnel shall have administrative and on-line medical direction. These guidelines are not meant to act as a substitute, proxy or alternative to that medical direction. Any conflict between these guidelines and the individual EMS provider's medical direction shall default to the Administrative or on-line medical direction.

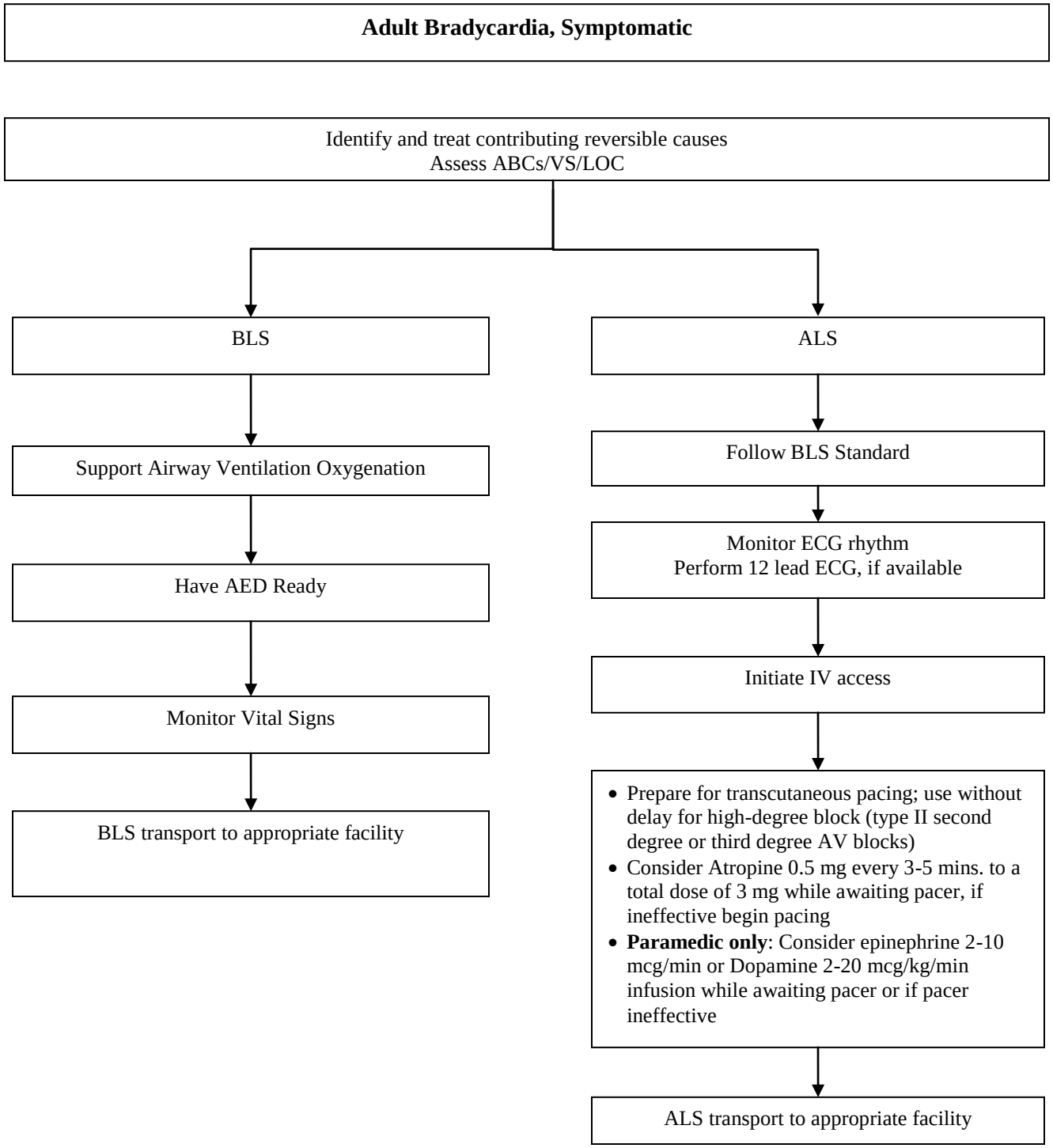
This guidance document outlines optional triage, treatment and transport methods for consideration during a public health emergency due to pandemic influenza. It is specifically recognized that there are acceptable variations from these guidelines. This guidance does NOT define, limit, expand, or otherwise purport to establish the legal standard of care. Local protocols for Cardiocerebral Resuscitation (CCR) or Cardiopulmonary Resuscitation (CPR) shall remain in effect.

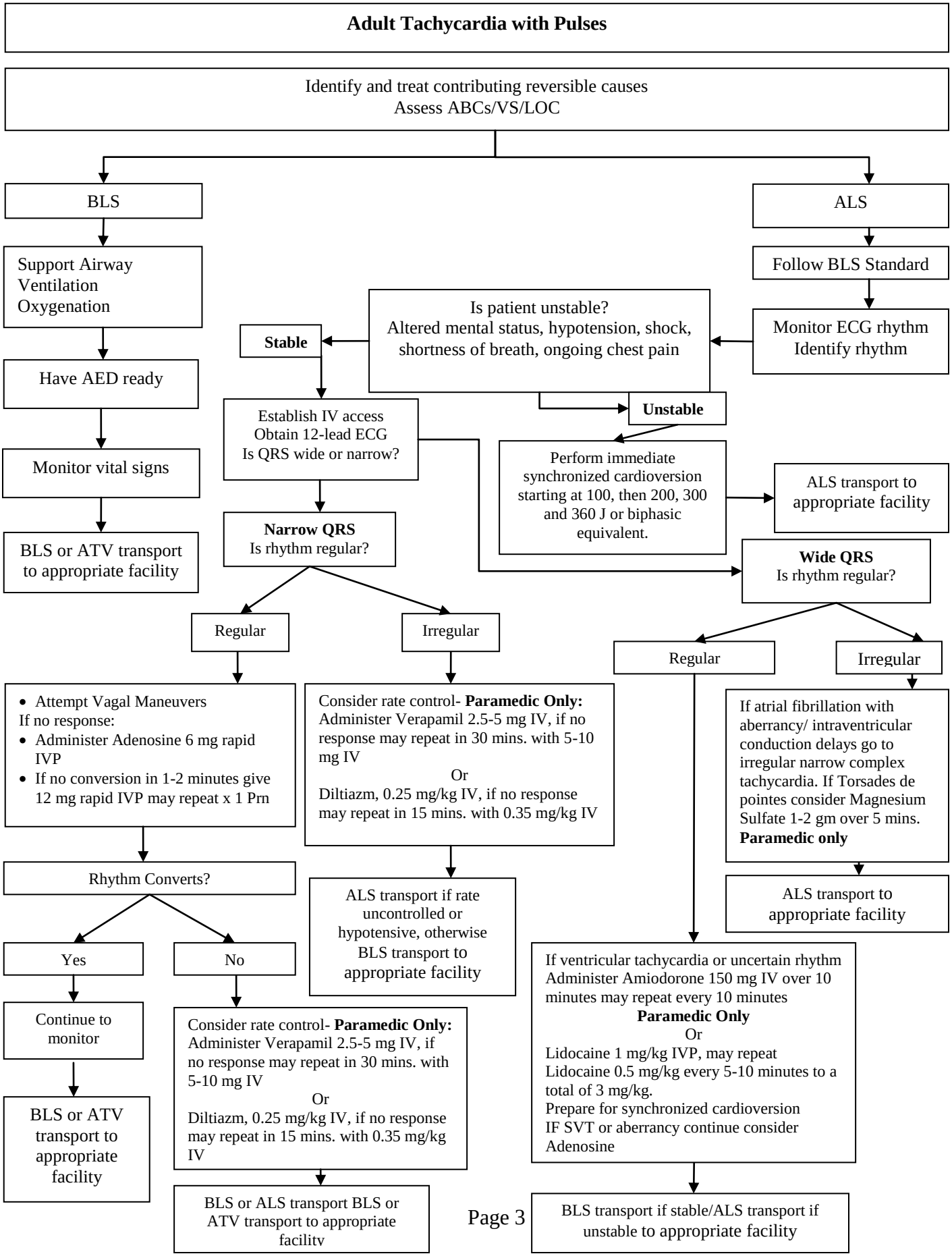
General Adult and Pediatric Alternate Triage, Treatment and Transport Guidelines For Pandemic Influenza



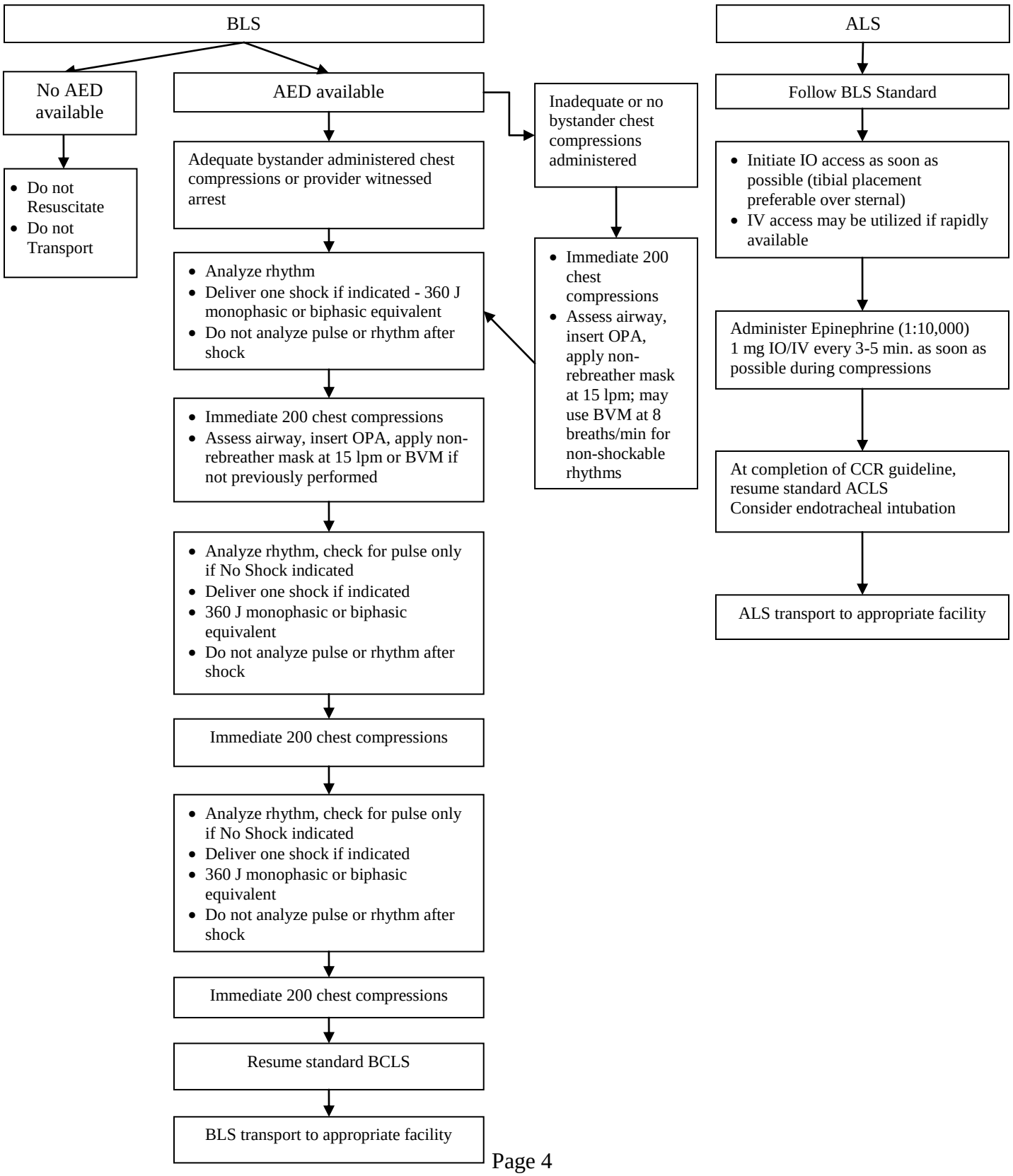
*Influenza-Like Illness (ILI) co-morbidities may include: Obesity (body mass index [BMI] ≥30), pregnancy, asthma, age (≥65, < 5, especially < 2 years old), People with medical conditions such as: Neurological and neurodevelopmental conditions [including disorders of the brain, spinal cord, peripheral nerve, & muscle such as cerebral palsy, epilepsy (seizure disorders), stroke, intellectual disability (mental retardation), moderate to severe developmental delay, muscular dystrophy, or spinal cord injury]; Chronic lung disease (chronic obstructive pulmonary disease [COPD] & cystic fibrosis); Heart disease (congenital heart disease, congestive heart failure & coronary artery disease) ; Blood disorders (e.g. sickle cell disease); Endocrine disorders (e.g. diabetes mellitus); Kidney disorders; Liver disorders; Metabolic disorders (e.g. inherited metabolic disorders and mitochondrial disorders); Weakened immune system due to disease or medication (e.g. people with HIV or AIDS, or cancer, or those on chronic steroids); People < 19 years of age receiving long-term aspirin therapy; Chronic Obstructive Pulmonary Disease (COPD)

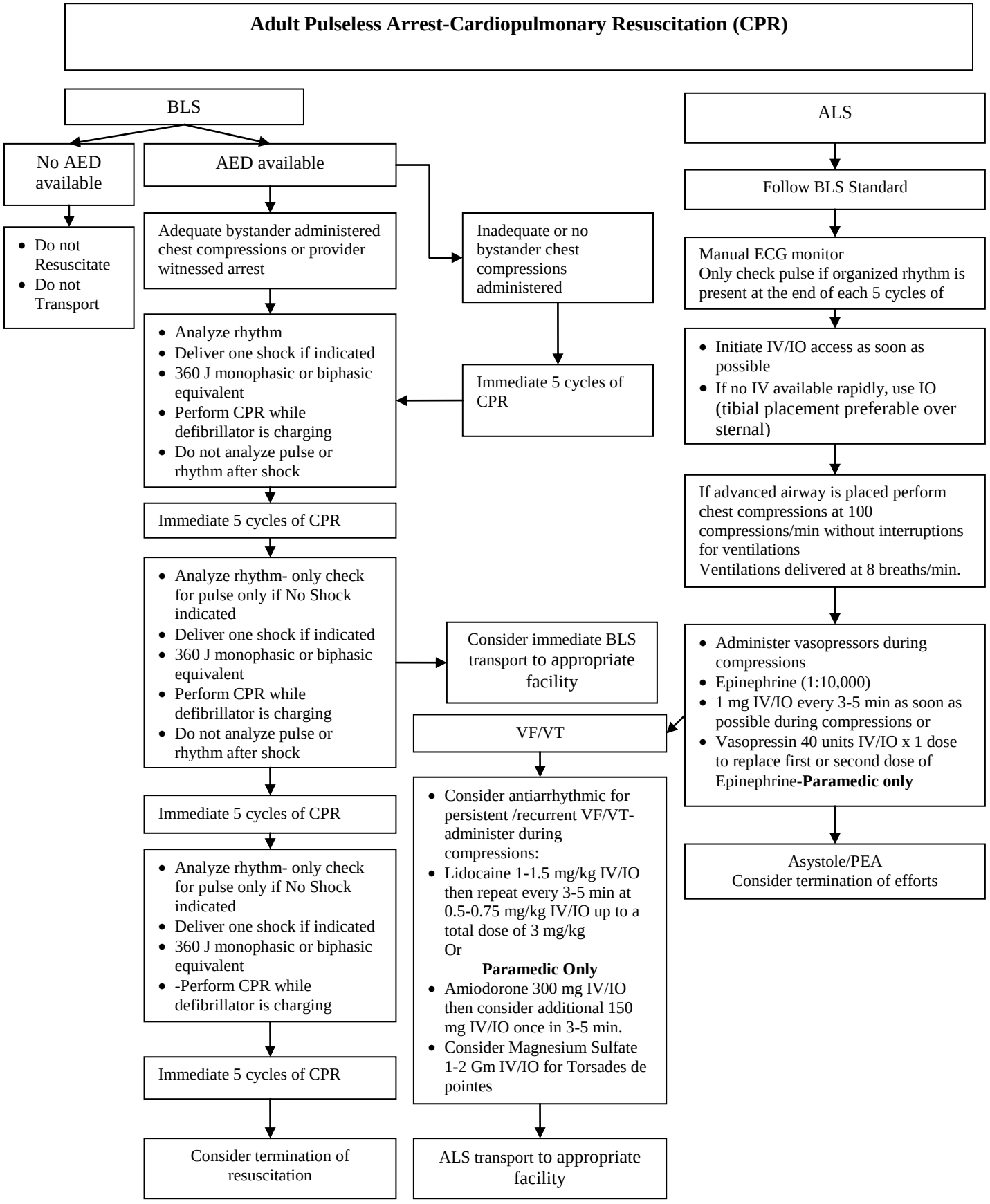

Adult Chest Pain of Probable Cardiac Origin
Assess ABCs/VS/LOC
BLS
Support Airway Ventilation Oxygenation
Have AED Ready
Administer 324-325 mg Aspirin PO chew and swallow
If patient has own Nitroglycerin, in original container, is not expired, and patient's systolic BP is greater than 100 mmHg assist patient with taking Nitroglycerin as necessary every 5 minutes to a total of 3 tablets/sprays or pain relief or drop in systolic BP to less than 100 mmHg
BLS transport to appropriate facility
ALS
Follow BLS Standard
Do not utilize patient assisted Nitroglycerin
Apply ECG monitor
If lethal or potentially lethal arrhythmias are present, proceed to appropriate cardiac treatment protocol
Perform 12 lead ECG, if available
Transmit ECG or pre-notify hospital if ST-elevation MI present
Administer 324-325 mg Aspirin PO chew and swallow
Initiate IV access
Administer Nitroglycerin 0.4 mg tablets or oral spray SL may repeat every 5 minutes to a total of 3 tablets to relieve pain if the patient's systolic BP is greater than 100 mmHg
Administer Morphine sulfate 2-4 mg IV every 5 minutes to a total of 10 mg if pain not relieved with Nitroglycerin and patient systolic BP is greater than 100 mmHg
If ST-elevation MI present
ALS transport to appropriate facility


Adult Bradycardia, Symptomatic
Identify and treat contributing reversible causes
Assess ABCs/VS/LOC
BLS
Support Airway Ventilation Oxygenation
Have AED Ready
Monitor Vital Signs
BLS transport to appropriate facility
ALS
Follow BLS Standard
Monitor ECG rhythm
Perform 12 lead ECG, if available
Initiate IV access
• Prepare for transcutaneous pacing; use without delay for high-degree block (type II second degree or third degree AV blocks)
• Consider Atropine 0.5 mg every 3-5 mins. to a total dose of 3 mg while awaiting pacer, if ineffective begin pacing
• Paramedic only: Consider epinephrine 2-10 mcg/min or Dopamine 2-20 mcg/kg/min infusion while awaiting pacer or if pacer ineffective
ALS transport to appropriate facility

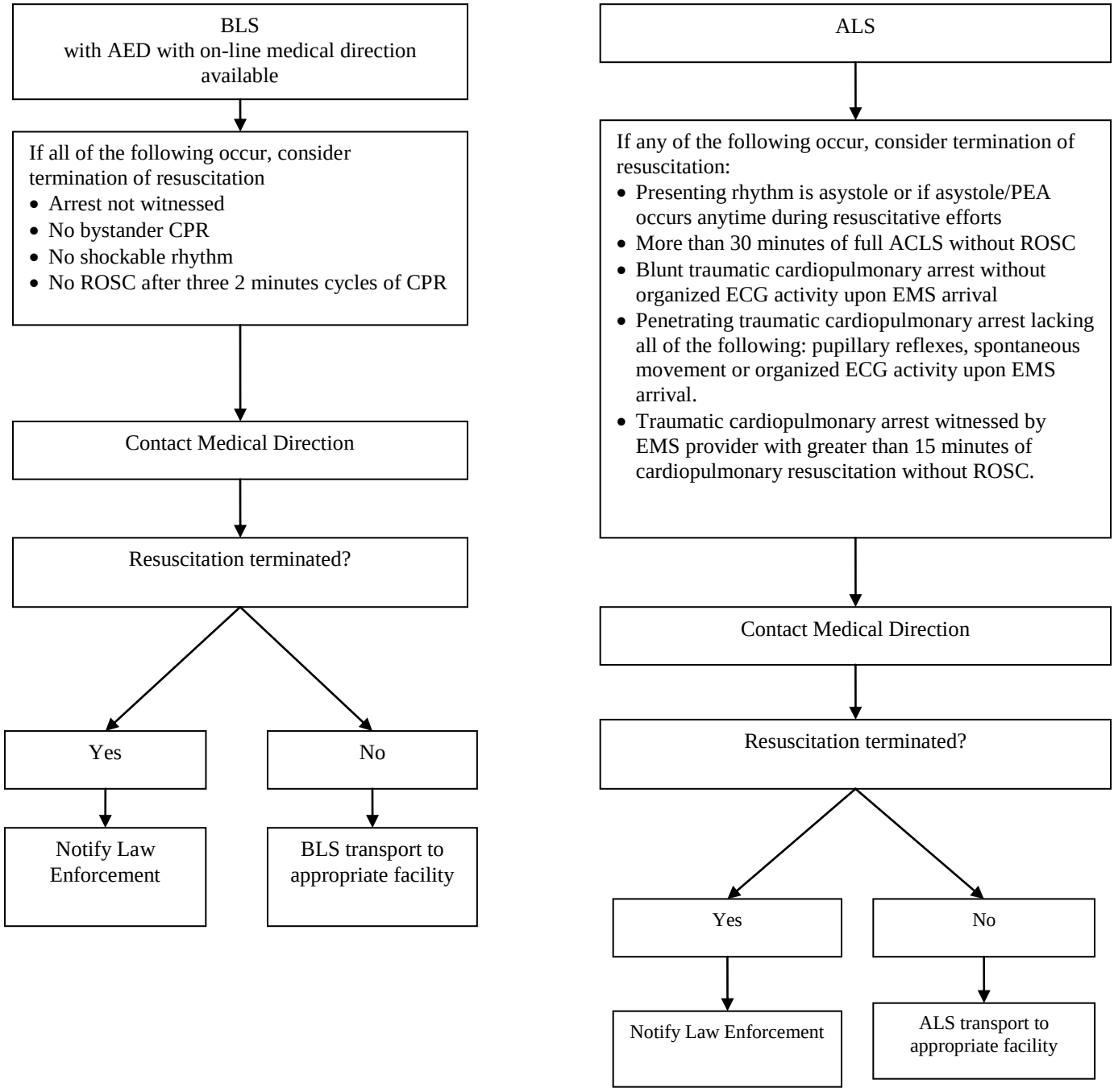

Adult Tachycardia with Pulses
Identify and treat contributing reversible causes
Assess ABCs/VS/LOC
BLS
Support Airway
Ventilation
Oxygenation
Have AED ready
Monitor vital signs
BLS or ATV transport to appropriate facility
ALS
Follow BLS Standard
Monitor ECG rhythm
Identify rhythm
Is patient unstable?
Altered mental status, hypotension, shock, shortness of breath, ongoing chest pain
Stable
Unstable
Establish IV access
Obtain 12-lead ECG
Is QRS wide or narrow?
Perform immediate synchronized cardioversion starting at 100, then 200, 300 and 360 J or biphasic equivalent.
ALS transport to appropriate facility
Narrow QRS
Is rhythm regular?
Wide QRS
Is rhythm regular?
Regular
Irregular
Regular
Irregular
• Attempt Vagal Maneuvers
If no response:
• Administer Adenosine 6 mg rapid IVP
• If no conversion in 1-2 minutes give 12 mg rapid IVP may repeat x 1 Prn
Consider rate control- Paramedic Only:
Administer Verapamil 2.5-5 mg IV, if no response may repeat in 30 mins. with 5-10 mg IV
Or
Diltiazm, 0.25 mg/kg IV, if no response may repeat in 15 mins. with 0.35 mg/kg IV
If atrial fibrillation with aberrancy/ intraventricular conduction delays go to irregular narrow complex tachycardia. If Torsades de pointes consider Magnesium Sulfate 1-2 gm over 5 mins. Paramedic only
Rhythm Converts?
ALS transport if rate uncontrolled or hypotensive, otherwise BLS transport to appropriate facility
ALS transport to appropriate facility
Yes
No
If ventricular tachycardia or uncertain rhythm
Administer Amiodorone 150 mg IV over 10 minutes may repeat every 10 minutes
Paramedic Only
Or
Lidocaine 1 mg/kg IVP, may repeat
Lidocaine 0.5 mg/kg every 5-10 minutes to a total of 3 mg/kg.
Prepare for synchronized cardioversion
IF SVT or aberrancy continue consider Adenosine
Continue to monitor
Consider rate control- Paramedic Only:
Administer Verapamil 2.5-5 mg IV, if no response may repeat in 30 mins. with 5-10 mg IV
Or
Diltiazm, 0.25 mg/kg IV, if no response may repeat in 15 mins. with 0.35 mg/kg IV
BLS or ATV transport to appropriate facility
BLS or ALS transport BLS or ATV transport to appropriate facility
BLS transport if stable/ALS transport if unstable to appropriate facility

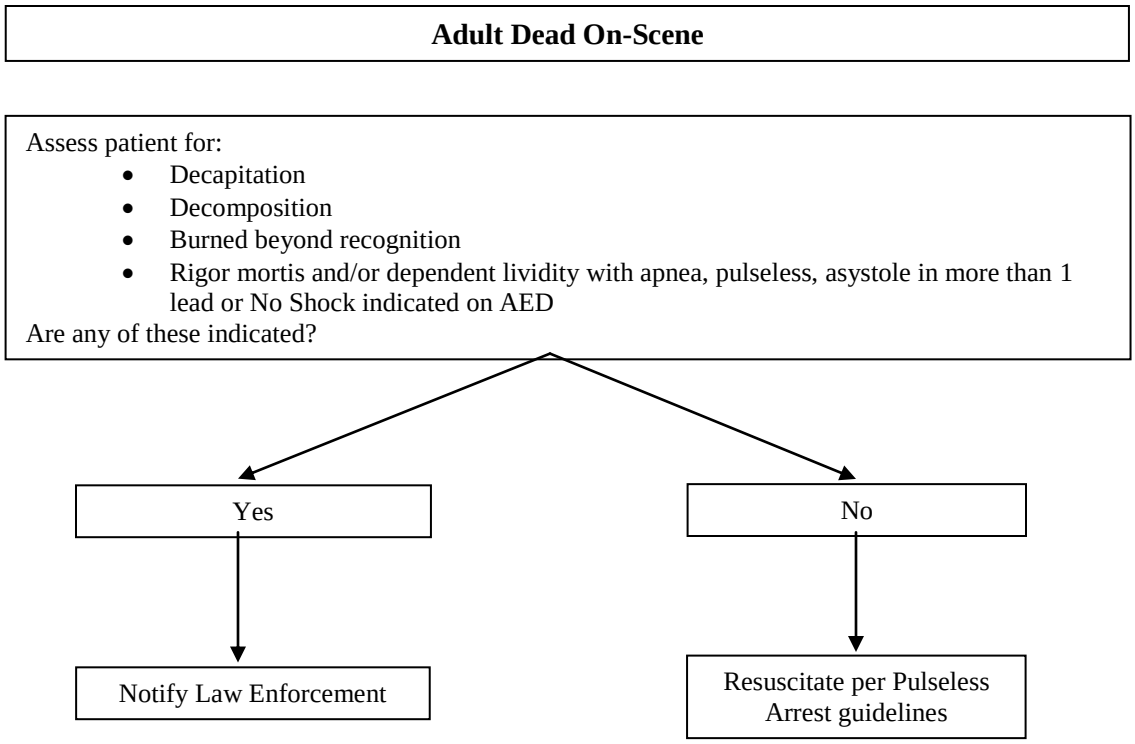
Adult Pulseless Arrest-Cardiocerebral Resuscitation (CCR)




Adult Pulseless Arrest-Cardiopulmonary Resuscitation (CPR)
BLS
No AED available
Do not Resuscitate
Do not Transport
AED available
Adequate bystander administered chest compressions or provider witnessed arrest
Inadequate or no bystander chest compressions administered
Immediate 5 cycles of CPR
Analyze rhythm
Deliver one shock if indicated
360 J monophasic or biphasic equivalent
Perform CPR while defibrillator is charging
Do not analyze pulse or rhythm after shock
Immediate 5 cycles of CPR
Analyze rhythm- only check for pulse only if No Shock indicated
Deliver one shock if indicated
360 J monophasic or biphasic equivalent
Perform CPR while defibrillator is charging
Do not analyze pulse or rhythm after shock
Immediate 5 cycles of CPR
Analyze rhythm- only check for pulse only if No Shock indicated
Deliver one shock if indicated
360 J monophasic or biphasic equivalent
-Perform CPR while defibrillator is charging
Immediate 5 cycles of CPR
Consider termination of resuscitation
Consider immediate BLS transport to appropriate facility
VF/VT
Consider antiarrhythmic for persistent /recurrent VF/VT- administer during compressions:
Lidocaine 1-1.5 mg/kg IV/IO then repeat every 3-5 min at 0.5-0.75 mg/kg IV/IO up to a total dose of 3 mg/kg
Or
Paramedic Only
Amiodorone 300 mg IV/IO then consider additional 150 mg IV/IO once in 3-5 min.
Consider Magnesium Sulfate 1-2 Gm IV/IO for Torsades de pointes
ALS transport to appropriate facility
ALS
Follow BLS Standard
Manual ECG monitor
Only check pulse if organized rhythm is present at the end of each 5 cycles of
Initiate IV/IO access as soon as possible
If no IV available rapidly, use IO (tibial placement preferable over sternal)
If advanced airway is placed perform chest compressions at 100 compressions/min without interruptions for ventilations
Ventilations delivered at 8 breaths/min.
Administer vasopressors during compressions
Epinephrine (1:10,000)
1 mg IV/IO every 3-5 min as soon as possible during compressions or
Vasopressin 40 units IV/IO x 1 dose to replace first or second dose of Epinephrine-Paramedic only
Asystole/PEA
Consider termination of efforts

Adult Termination of Resuscitation Efforts
[Environmental Hypothermia not Present]




Adult Dead On-Scene
Assess patient for:
Decapitation
Decomposition
Burned beyond recognition
Rigor mortis and/or dependent lividity with apnea, pulseless, asystole in more than 1 lead or No Shock indicated on AED
Are any of these indicated?
Yes
No
Notify Law Enforcement
Resuscitate per Pulseless Arrest guidelines

Adult Transport to Designated Cardiac Arrest Center/Cardiac Arrest Post-Resuscitation (CRC)

Inclusion Criteria:

- Non-traumatic OHCA with return of palpable central pulses or other evidence of spontaneous circulation
- GCS less than 8 after ROSC
- Transport to CRC when feasible, resources available, and will add less than 15 minutes to transport time compared to transport to non-CRC
- Less than 30 minutes CPR/CCR prior to arrival of EMS
- Patient not pregnant
- No uncontrolled hemorrhage
- No persistent unstable arrhythmia
- Patient does not appear to have sever environmental hypothermia related arrhythmia
- No DNR paperwork identified during resuscitation

Yes

Notify receiving facility as soon as possible

Post-resuscitation care

Control airway as necessary
Maintain ventilation rate of 8 breaths per min.

Consider anti-arrhythmic medication

Perform 12-lead EKG, if available
Pre-notify receiving facility of ST-elevation MI

If available, administer 2000 mL cold (4^{o}C/39.2^{o}F) NS IV fluid bolus to the adult patient

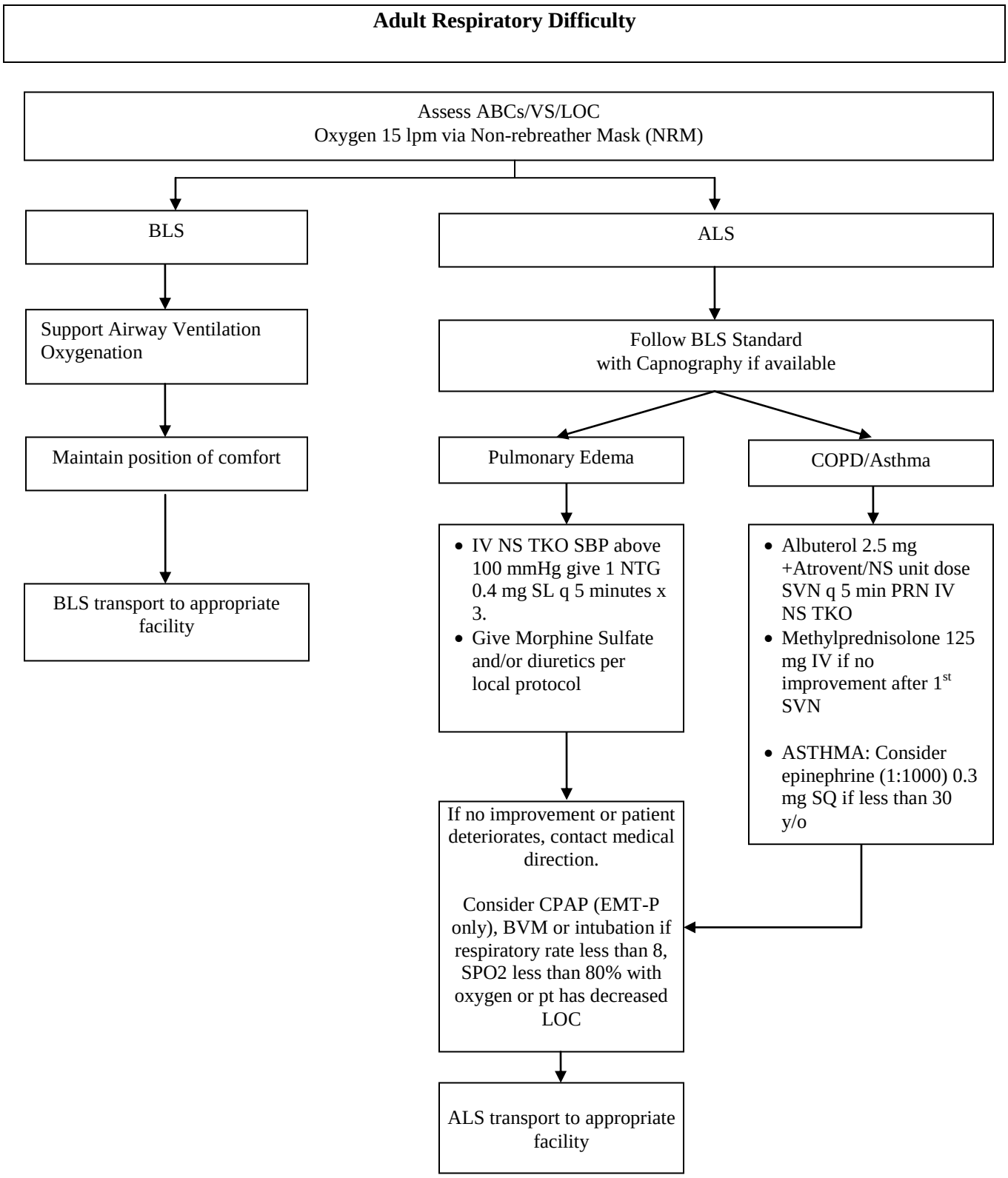
Apply cold/ice packs to groin/axillae/neck

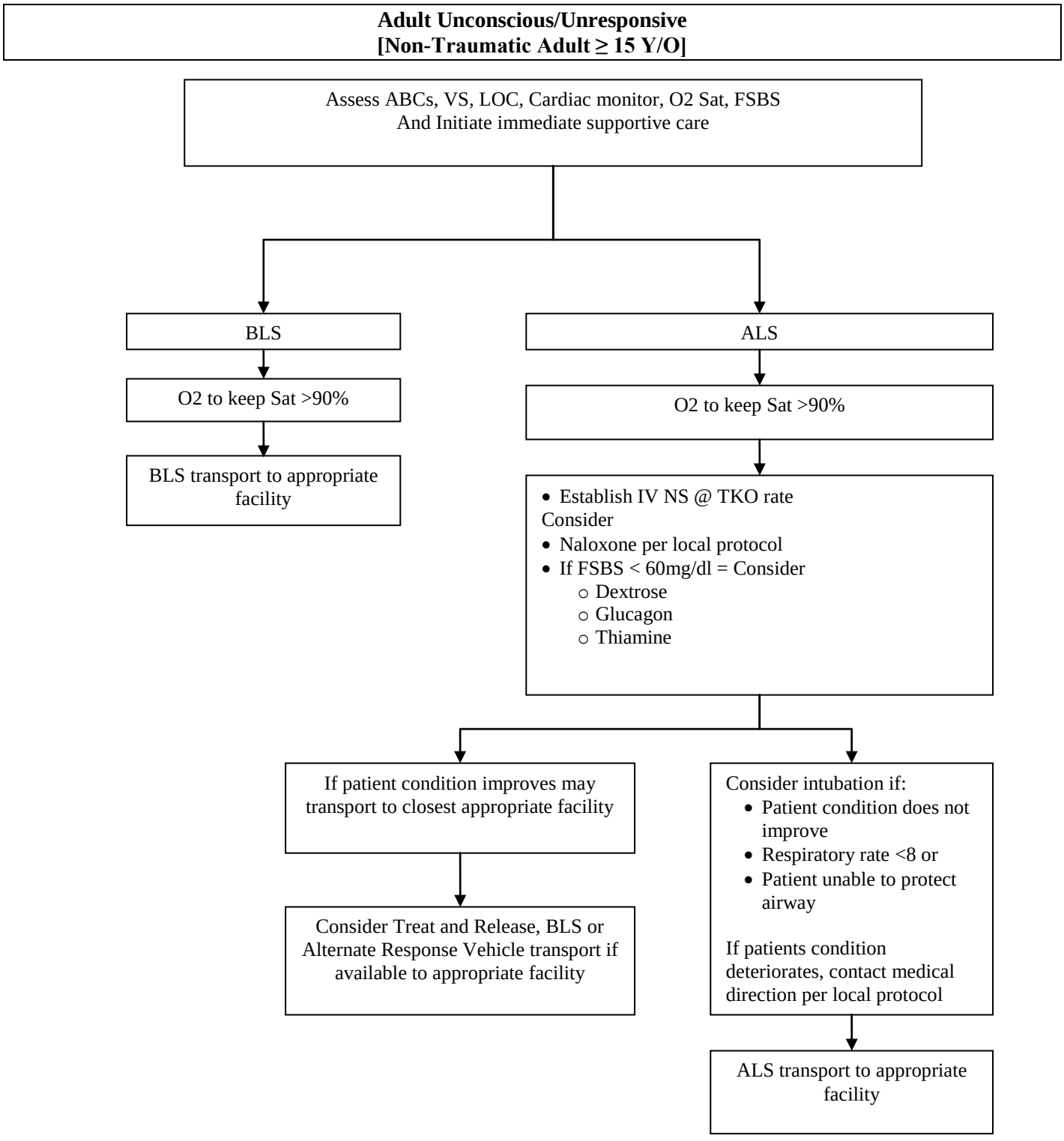
Consider dopamine for persistent hypotension **– Paramedic only**

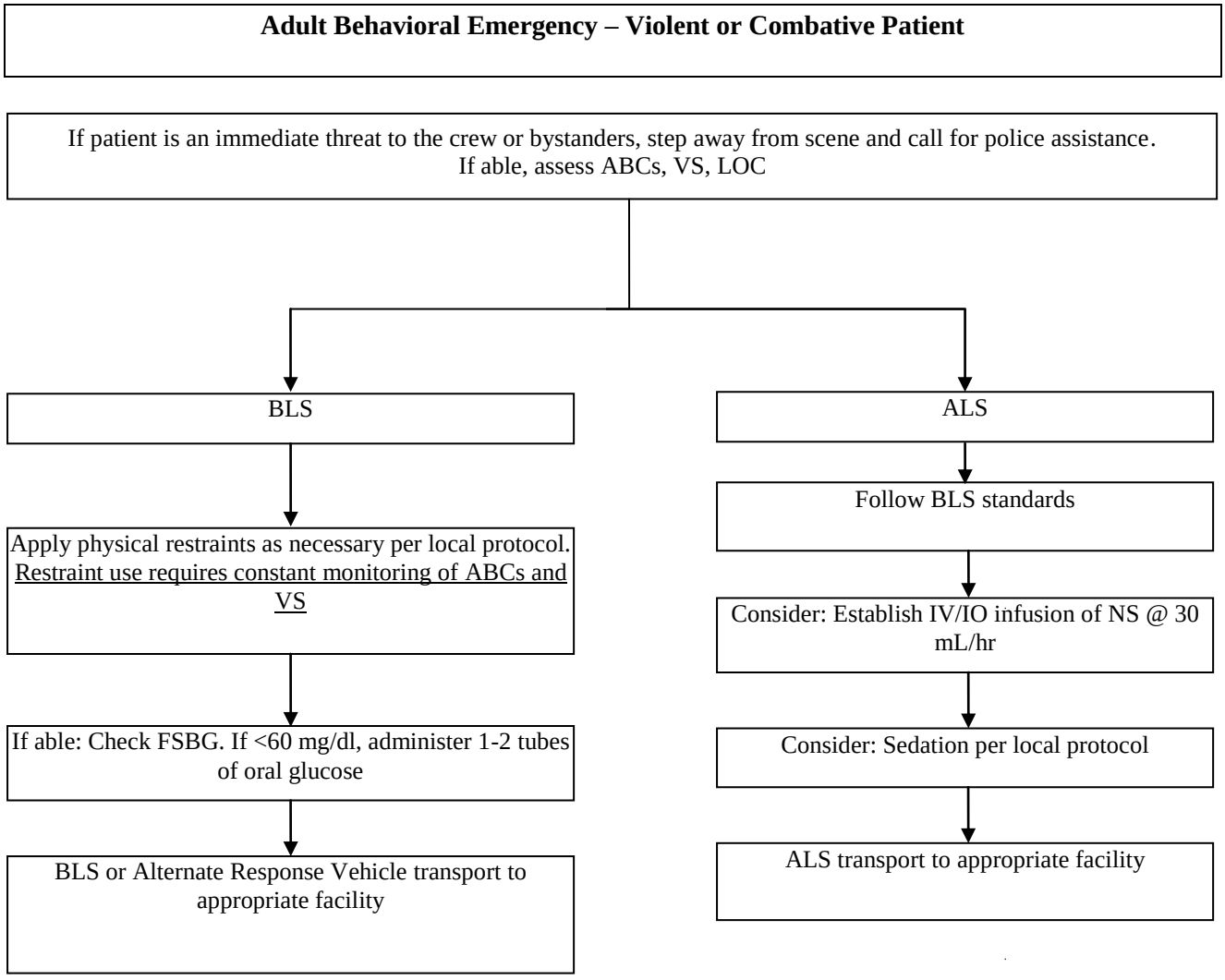
ALS transport to appropriate facility

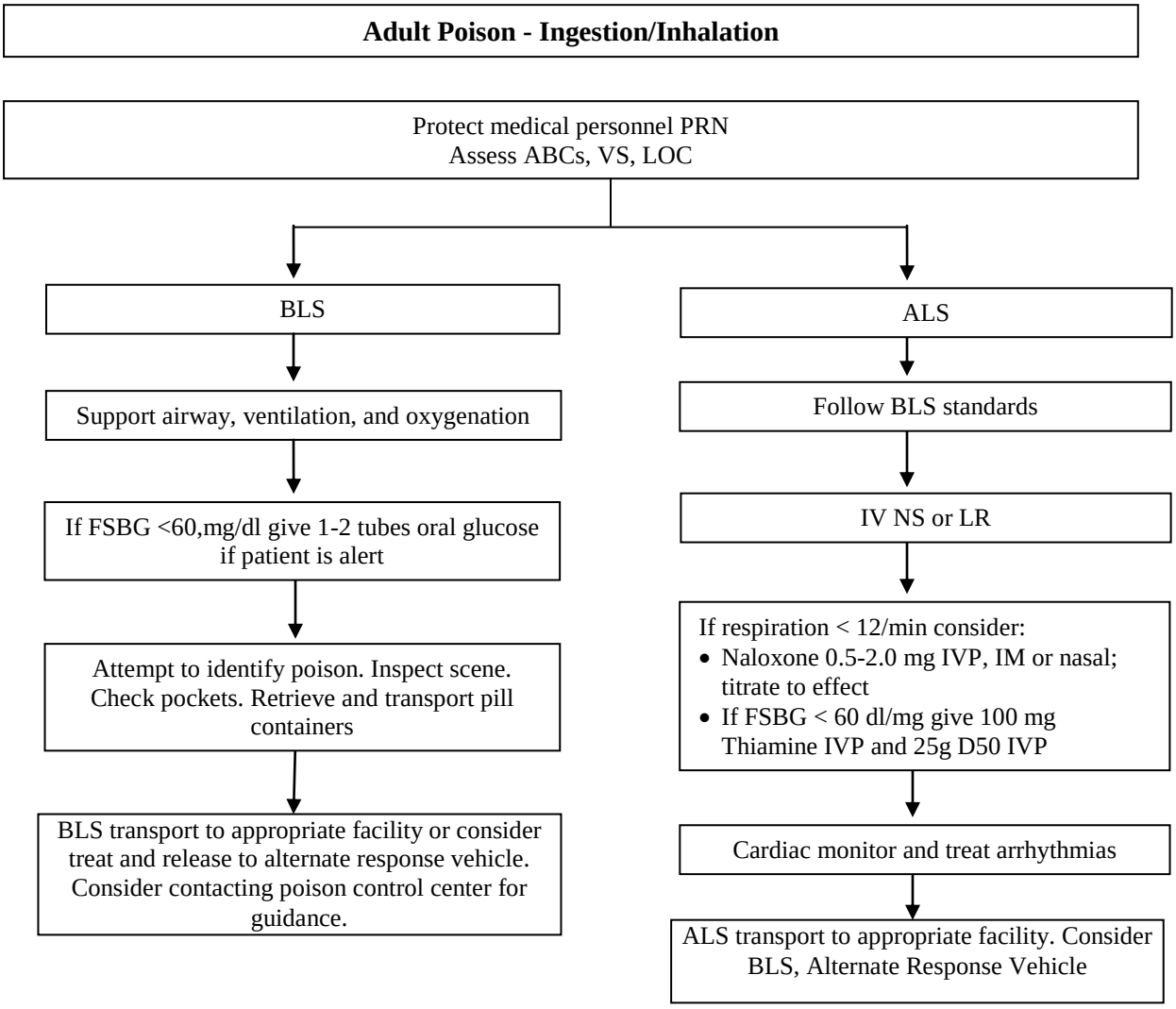
No

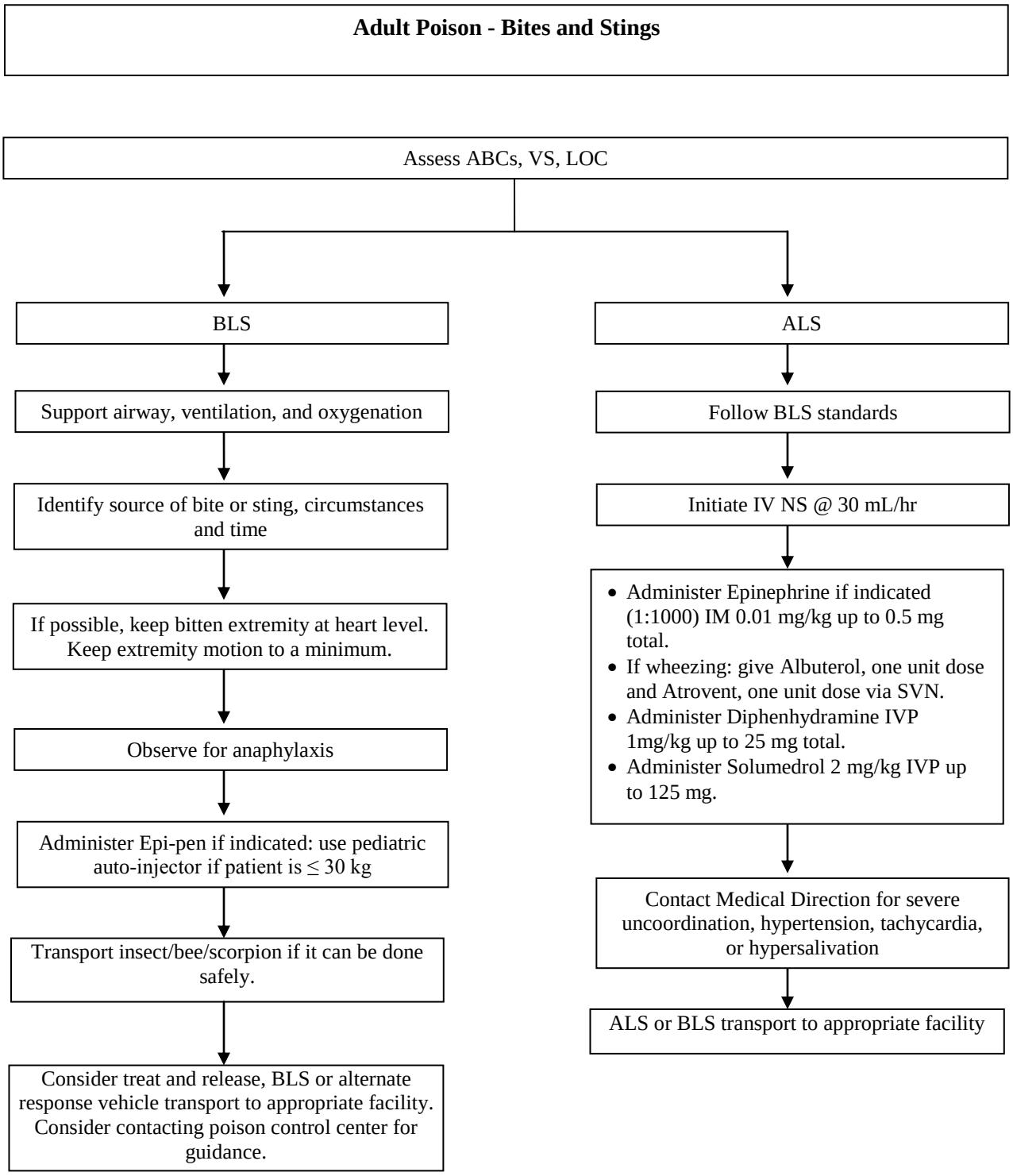
ALS transport to appropriate facility


Adult Respiratory Difficulty
Assess ABCs/VS/LOC
Oxygen 15 lpm via Non-rebreather Mask (NRM)
BLS
ALS
Support Airway Ventilation Oxygenation
Maintain position of comfort
BLS transport to appropriate facility
Follow BLS Standard with Capnography if available
Pulmonary Edema
COPD/Asthma
IV NS TKO SBP above 100 mmHg give 1 NTG 0.4 mg SL q 5 minutes x 3.
Give Morphine Sulfate and/or diuretics per local protocol
Albuterol 2.5 mg +Atrovent/NS unit dose SVN q 5 min PRN IV NS TKO
Methylprednisolone 125 mg IV if no improvement after 1st SVN
ASTHMA: Consider epinephrine (1:1000) 0.3 mg SQ if less than 30 y/o
If no improvement or patient deteriorates, contact medical direction.
Consider CPAP (EMT-P only), BVM or intubation if respiratory rate less than 8, SPO2 less than 80% with oxygen or pt has decreased LOC
ALS transport to appropriate facility

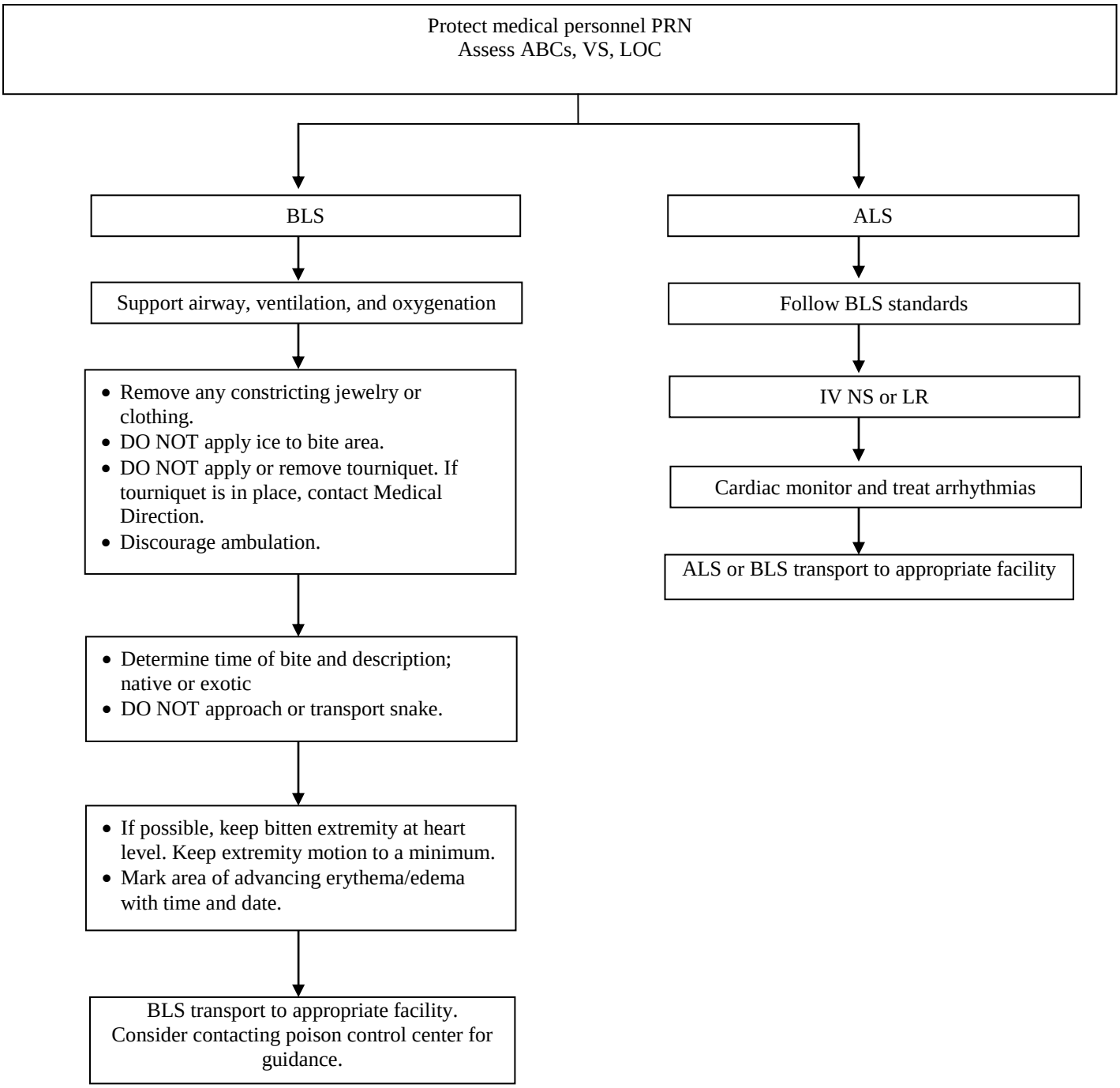

Adult Unconscious/Unresponsive
[Non-Traumatic Adult ≥ 15 Y/O]
Assess ABCs, VS, LOC, Cardiac monitor, O2 Sat, FSBS
And Initiate immediate supportive care
BLS
O2 to keep Sat >90%
BLS transport to appropriate facility
ALS
O2 to keep Sat >90%
• Establish IV NS @ TKO rate
Consider
• Naloxone per local protocol
• If FSBS < 60mg/dl = Consider
○ Dextrose
○ Glucagon
○ Thiamine
If patient condition improves may transport to closest appropriate facility
Consider Treat and Release, BLS or Alternate Response Vehicle transport if available to appropriate facility
Consider intubation if:
• Patient condition does not improve
• Respiratory rate <8 or
• Patient unable to protect airway
If patients condition deteriorates, contact medical direction per local protocol
ALS transport to appropriate facility

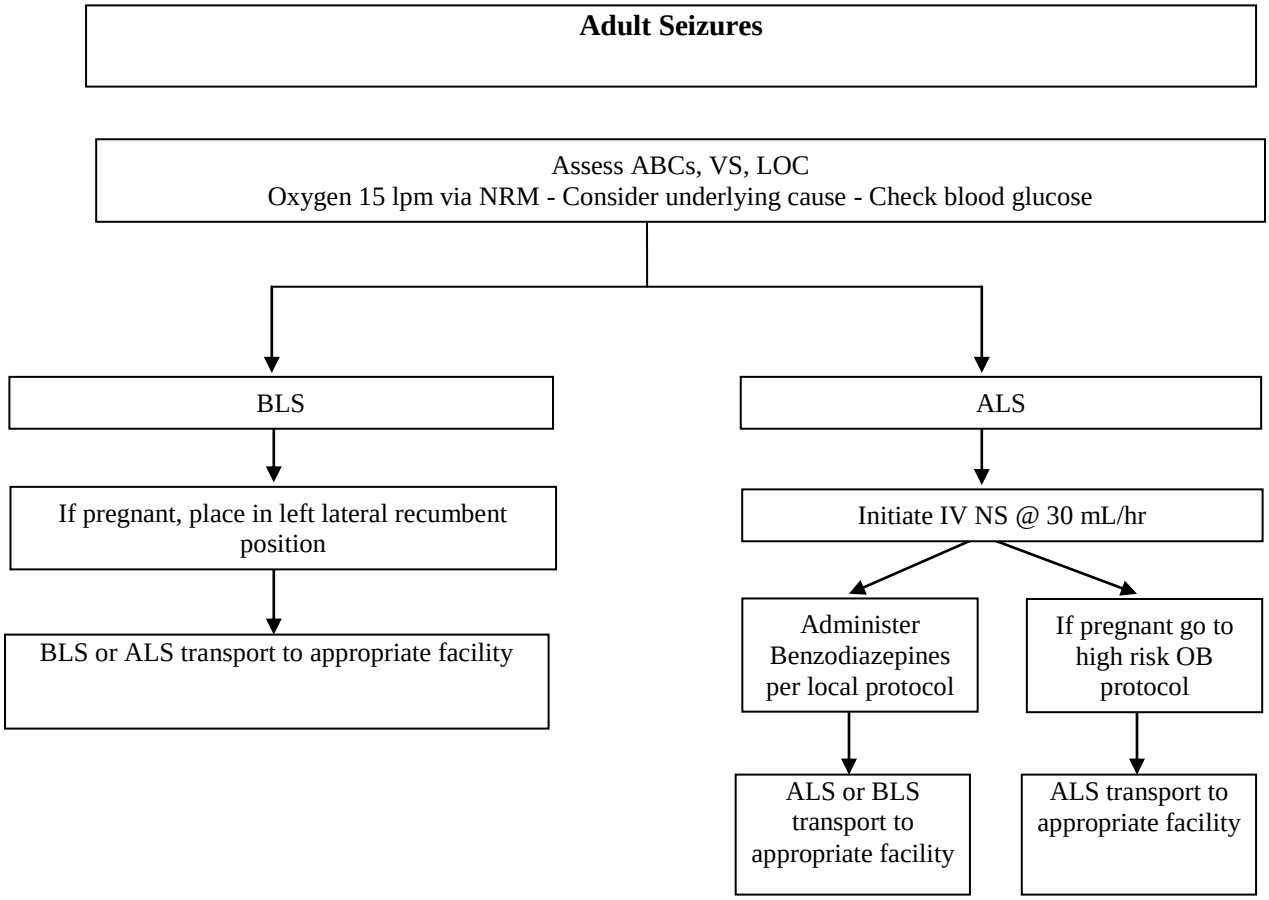

Adult Behavioral Emergency – Violent or Combative Patient
If patient is an immediate threat to the crew or bystanders, step away from scene and call for police assistance.
If able, assess ABCs, VS, LOC
BLS
Apply physical restraints as necessary per local protocol.
Restraint use requires constant monitoring of ABCs and VS
If able: Check FSBG. If <60 mg/dl, administer 1-2 tubes of oral glucose
BLS or Alternate Response Vehicle transport to appropriate facility
ALS
Follow BLS standards
Consider: Establish IV/IO infusion of NS @ 30 mL/hr
Consider: Sedation per local protocol
ALS transport to appropriate facility

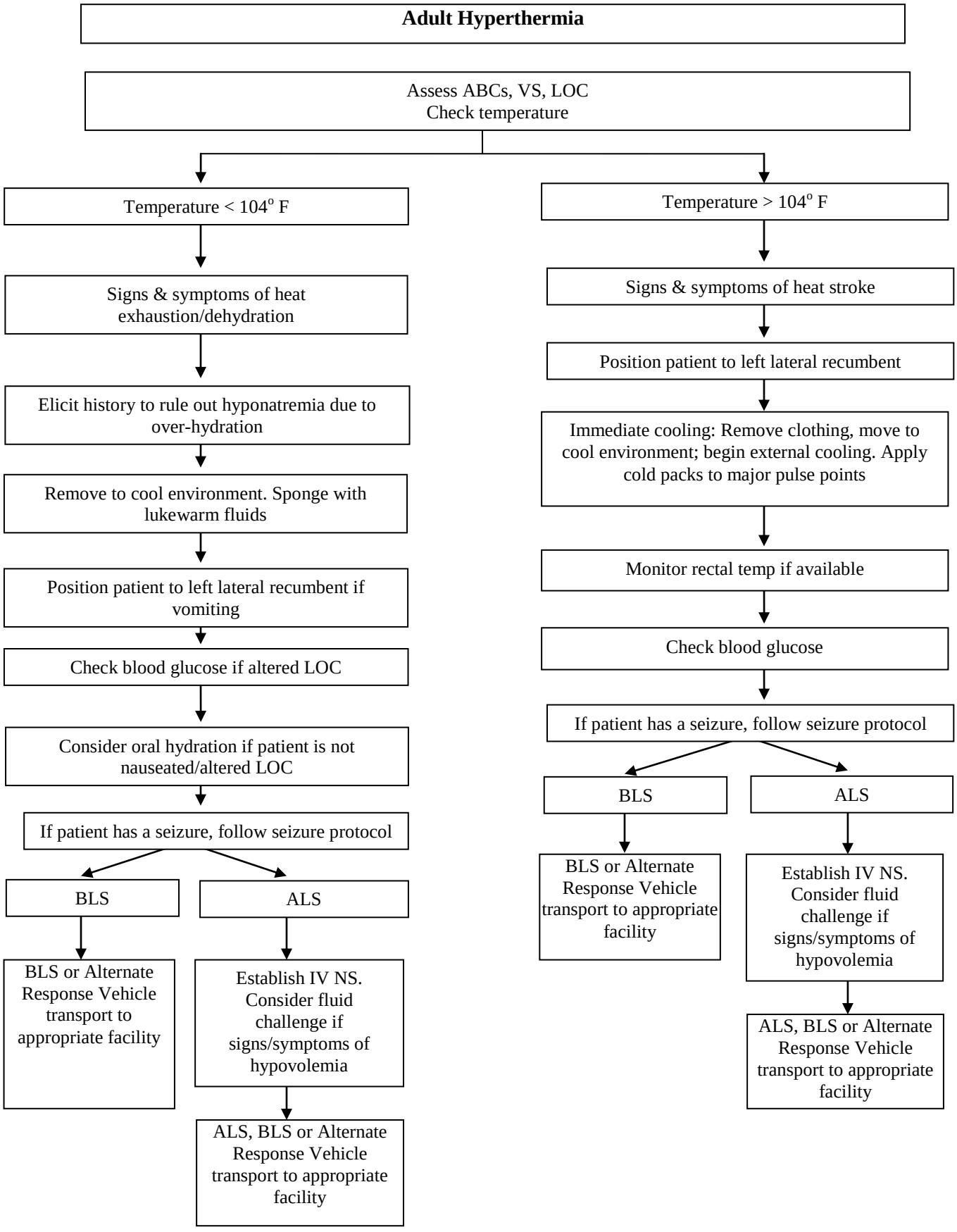

Adult Poison - Ingestion/Inhalation
Protect medical personnel PRN
Assess ABCs, VS, LOC
BLS
Support airway, ventilation, and oxygenation
If FSBG <60,mg/dl give 1-2 tubes oral glucose if patient is alert
Attempt to identify poison. Inspect scene. Check pockets. Retrieve and transport pill containers
BLS transport to appropriate facility or consider treat and release to alternate response vehicle. Consider contacting poison control center for guidance.
ALS
Follow BLS standards
IV NS or LR
If respiration < 12/min consider:
• Naloxone 0.5-2.0 mg IVP, IM or nasal; titrate to effect
• If FSBG < 60 dl/mg give 100 mg Thiamine IVP and 25g D50 IVP
Cardiac monitor and treat arrhythmias
ALS transport to appropriate facility. Consider BLS, Alternate Response Vehicle

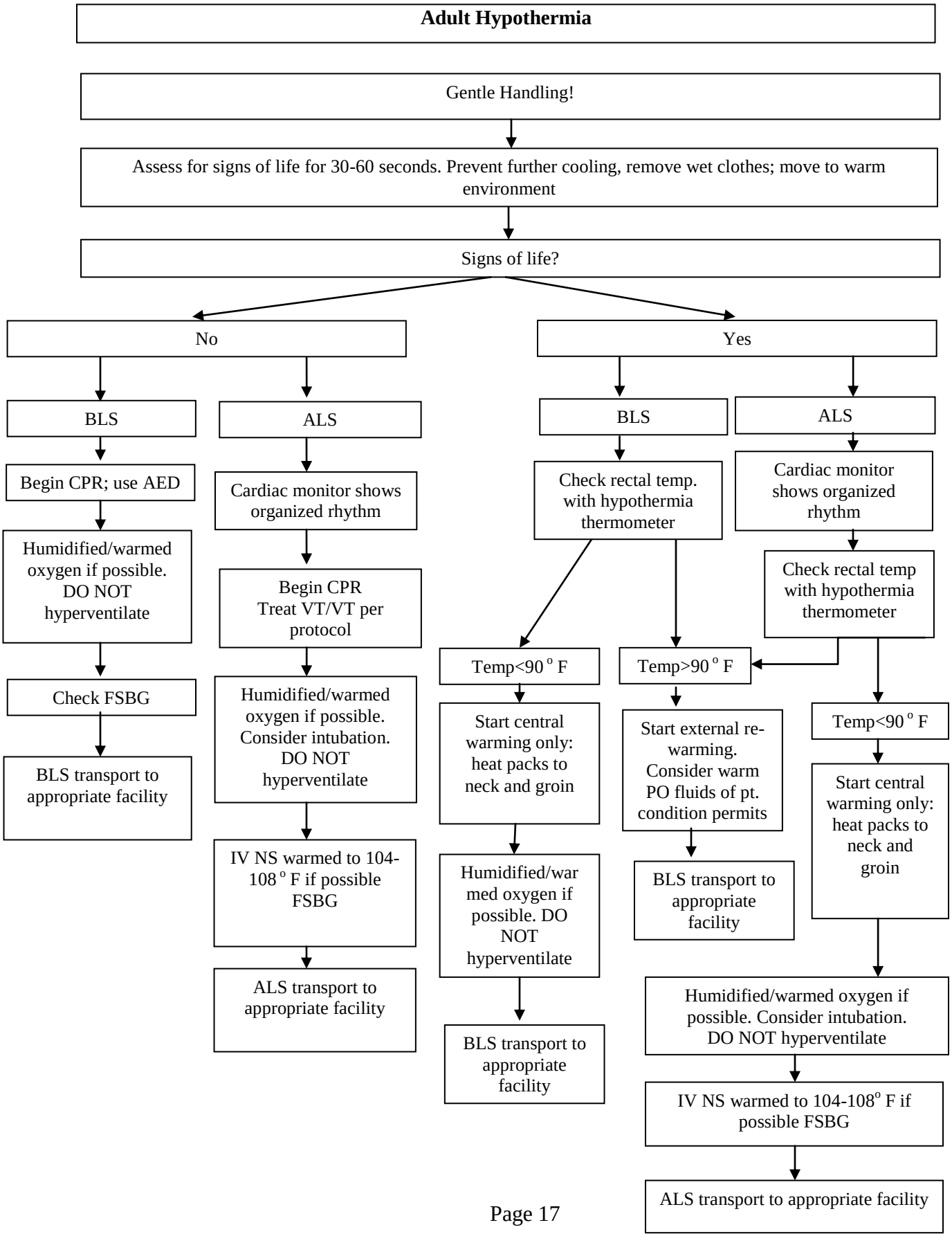

Adult Poison - Bites and Stings
Assess ABCs, VS, LOC
BLS
Support airway, ventilation, and oxygenation
Identify source of bite or sting, circumstances and time
If possible, keep bitten extremity at heart level. Keep extremity motion to a minimum.
Observe for anaphylaxis
Administer Epi-pen if indicated: use pediatric auto-injector if patient is ≤ 30 kg
Transport insect/bee/scorpion if it can be done safely.
Consider treat and release, BLS or alternate response vehicle transport to appropriate facility. Consider contacting poison control center for guidance.
ALS
Follow BLS standards
Initiate IV NS @ 30 mL/hr
Administer Epinephrine if indicated (1:1000) IM 0.01 mg/kg up to 0.5 mg total.
If wheezing: give Albuterol, one unit dose and Atrovent, one unit dose via SVN.
Administer Diphenhydramine IVP 1mg/kg up to 25 mg total.
Administer Solumedrol 2 mg/kg IVP up to 125 mg.
Contact Medical Direction for severe uncoordination, hypertension, tachycardia, or hypersalivation
ALS or BLS transport to appropriate facility

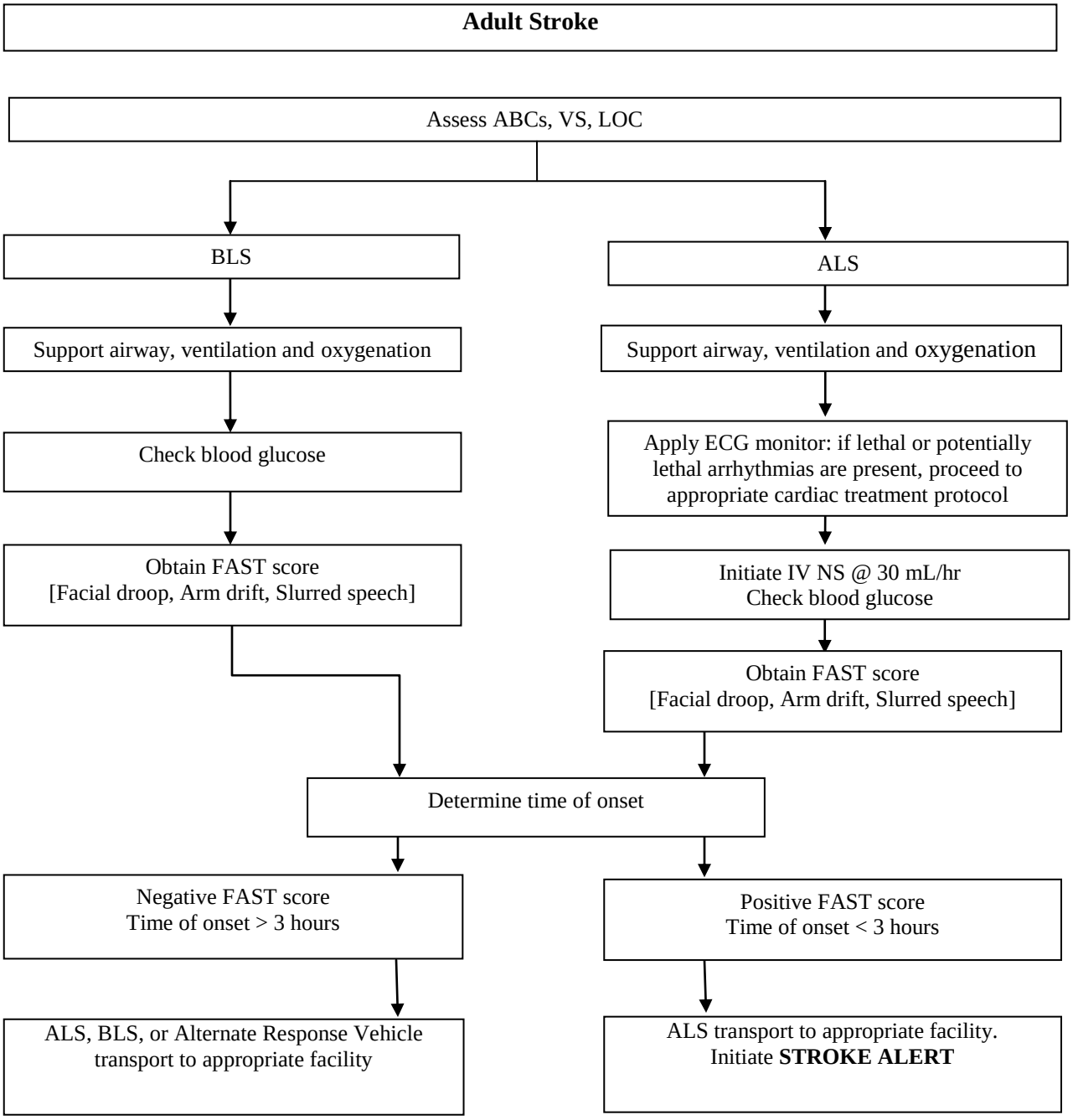
Adult Poison – Snakebite



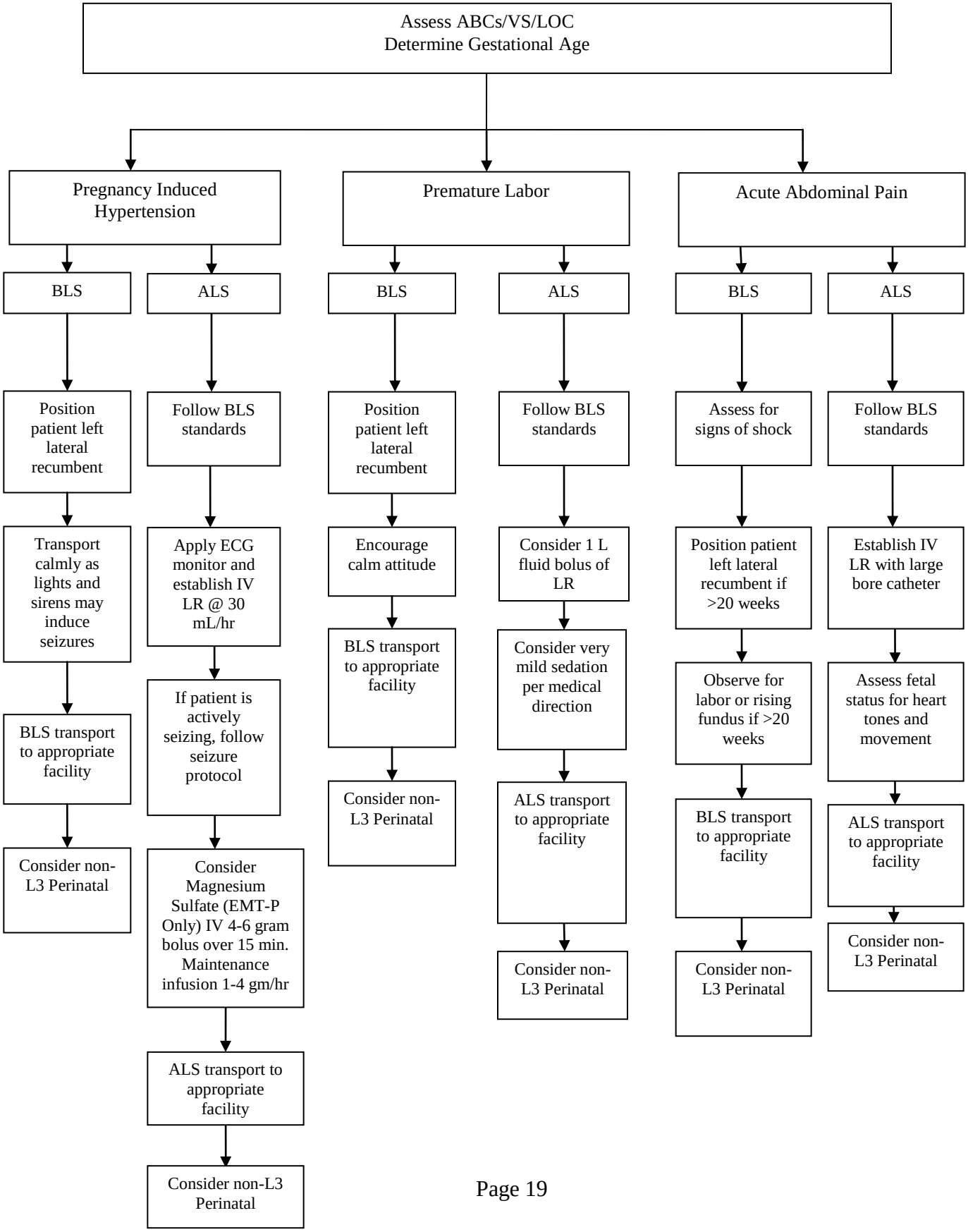

Adult Seizures
Assess ABCs, VS, LOC
Oxygen 15 lpm via NRM - Consider underlying cause - Check blood glucose
BLS
If pregnant, place in left lateral recumbent position
BLS or ALS transport to appropriate facility
ALS
Initiate IV NS @ 30 mL/hr
Administer Benzodiazepines per local protocol
If pregnant go to high risk OB protocol
ALS or BLS transport to appropriate facility
ALS transport to appropriate facility

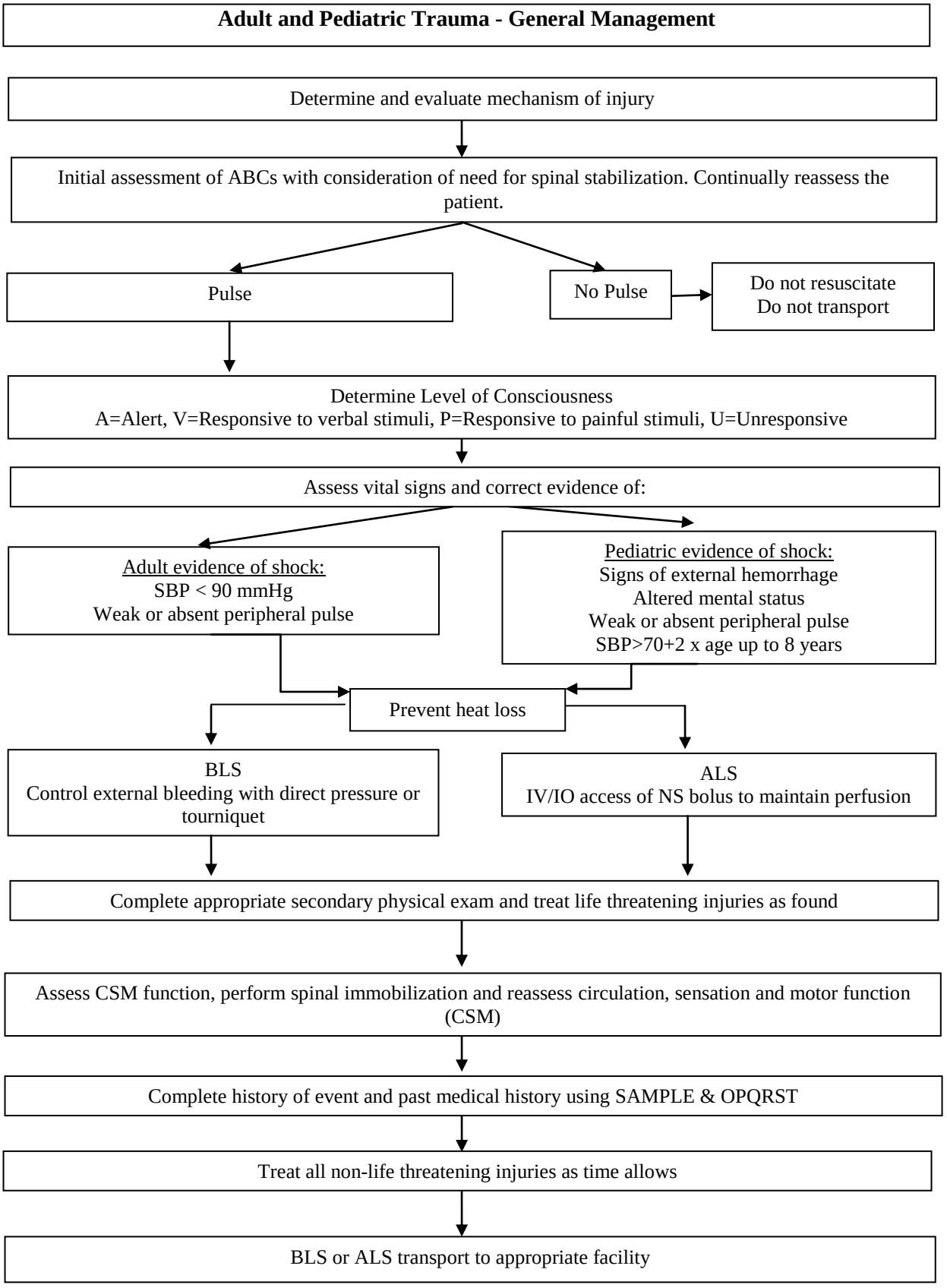

Adult Hyperthermia
Assess ABCs, VS, LOC
Check temperature
Temperature < 104° F
Signs & symptoms of heat exhaustion/dehydration
Elicit history to rule out hyponatremia due to over-hydration
Remove to cool environment. Sponge with lukewarm fluids
Position patient to left lateral recumbent if vomiting
Check blood glucose if altered LOC
Consider oral hydration if patient is not nauseated/altered LOC
If patient has a seizure, follow seizure protocol
BLS
ALS
BLS or Alternate Response Vehicle transport to appropriate facility
Establish IV NS. Consider fluid challenge if signs/symptoms of hypovolemia
ALS, BLS or Alternate Response Vehicle transport to appropriate facility
Temperature > 104° F
Signs & symptoms of heat stroke
Position patient to left lateral recumbent
Immediate cooling: Remove clothing, move to cool environment; begin external cooling. Apply cold packs to major pulse points
Monitor rectal temp if available
Check blood glucose
If patient has a seizure, follow seizure protocol
BLS
ALS
BLS or Alternate Response Vehicle transport to appropriate facility
Establish IV NS. Consider fluid challenge if signs/symptoms of hypovolemia
ALS, BLS or Alternate Response Vehicle transport to appropriate facility


Adult Hypothermia
Gentle Handling!
Assess for signs of life for 30-60 seconds. Prevent further cooling, remove wet clothes; move to warm environment
Signs of life?
No
Yes
BLS
Begin CPR; use AED
Humidified/warmed oxygen if possible. DO NOT hyperventilate
Check FSBG
BLS transport to appropriate facility
ALS
Cardiac monitor shows organized rhythm
Begin CPR Treat VT/VT per protocol
Humidified/warmed oxygen if possible. Consider intubation. DO NOT hyperventilate
IV NS warmed to 104-108 o F if possible FSBG
ALS transport to appropriate facility
BLS
Check rectal temp. with hypothermia thermometer
Temp<90 o F
Start central warming only: heat packs to neck and groin
Humidified/warmed oxygen if possible. DO NOT hyperventilate
BLS transport to appropriate facility
Temp>90 o F
Start external re-warming. Consider warm PO fluids of pt. condition permits
BLS transport to appropriate facility
ALS
Cardiac monitor shows organized rhythm
Check rectal temp with hypothermia thermometer
Temp<90 o F
Start central warming only: heat packs to neck and groin
Humidified/warmed oxygen if possible. Consider intubation. DO NOT hyperventilate
IV NS warmed to 104-108o F if possible FSBG
ALS transport to appropriate facility

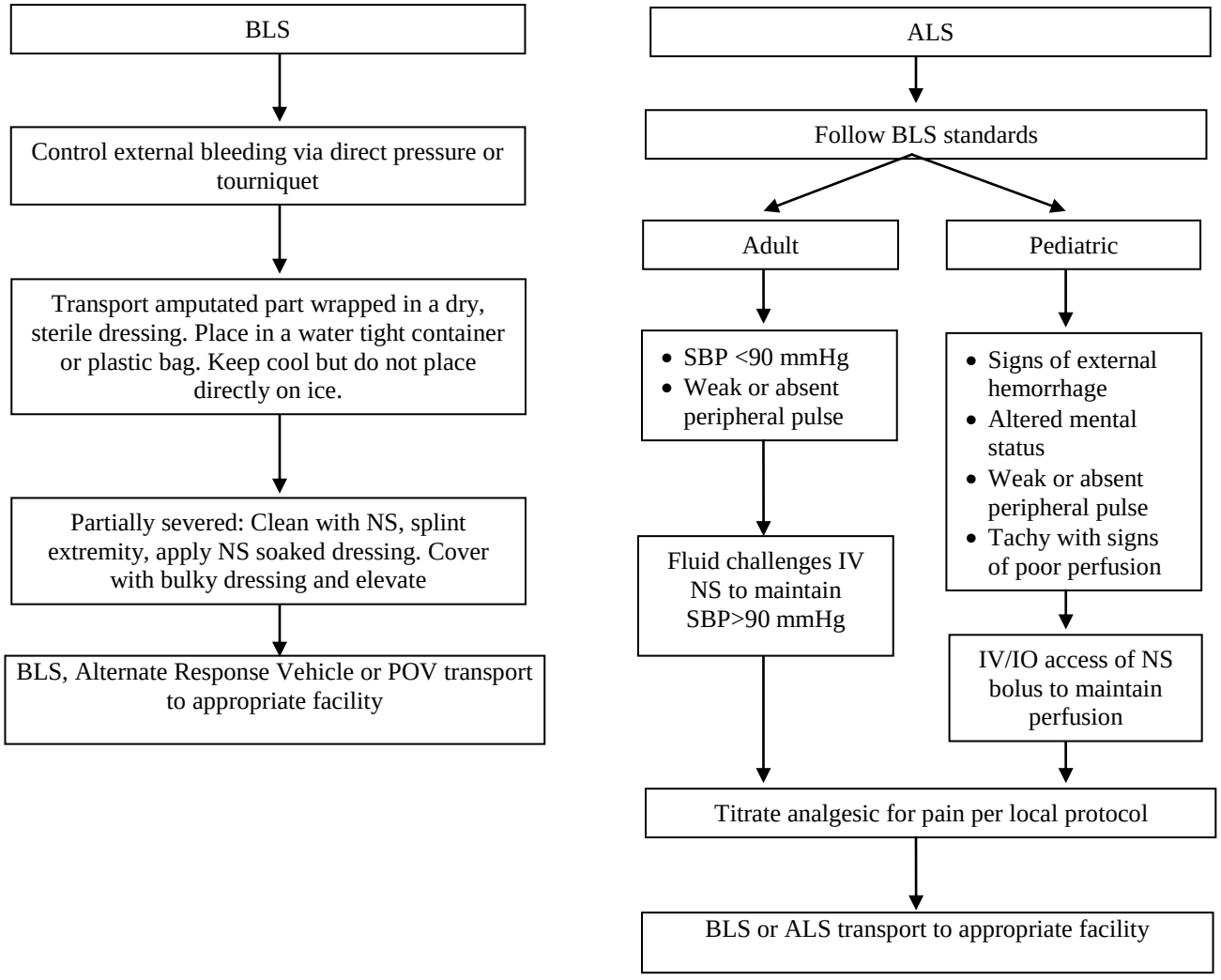

Adult Stroke
Assess ABCs, VS, LOC
BLS
Support airway, ventilation and oxygenation
Check blood glucose
Obtain FAST score
[Facial droop, Arm drift, Slurred speech]
ALS
Support airway, ventilation and oxygenation
Apply ECG monitor: if lethal or potentially lethal arrhythmias are present, proceed to appropriate cardiac treatment protocol
Initiate IV NS @ 30 mL/hr
Check blood glucose
Obtain FAST score
[Facial droop, Arm drift, Slurred speech]
Determine time of onset
Negative FAST score
Time of onset > 3 hours
ALS, BLS, or Alternate Response Vehicle transport to appropriate facility
Positive FAST score
Time of onset < 3 hours
ALS transport to appropriate facility.
Initiate **STROKE ALERT**

Adult High Risk OB

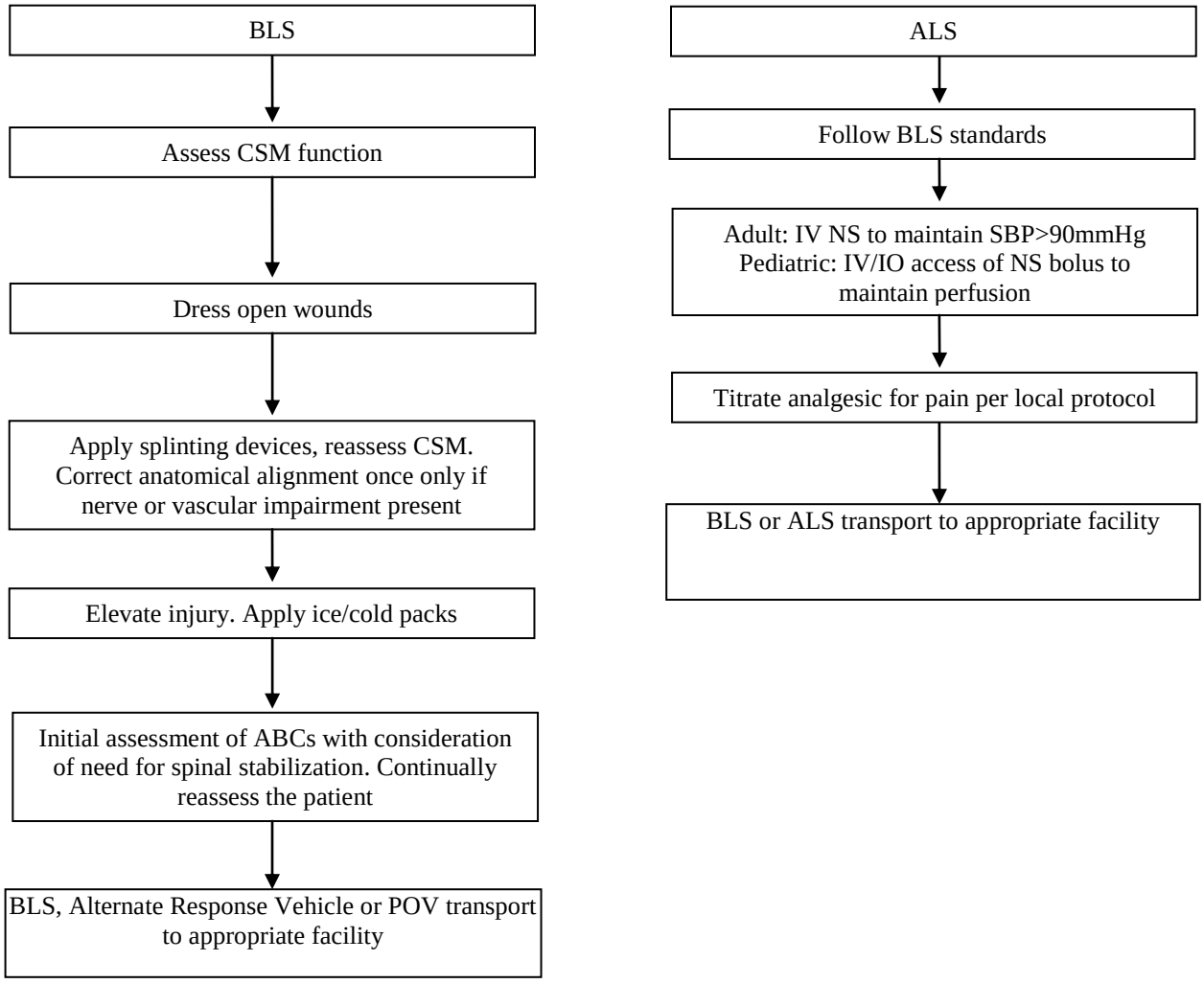


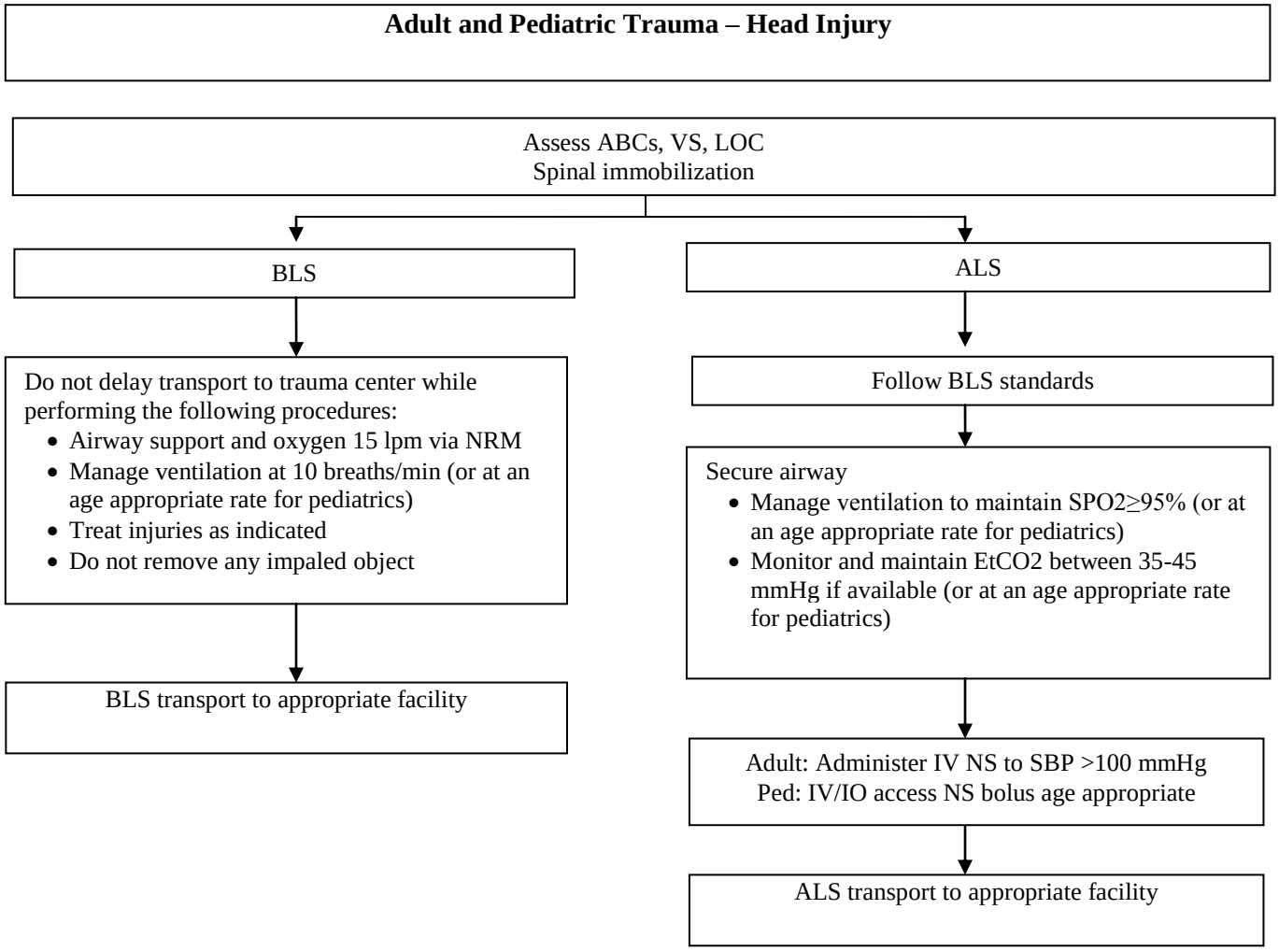

Adult and Pediatric Trauma - General Management
Determine and evaluate mechanism of injury
Initial assessment of ABCs with consideration of need for spinal stabilization. Continually reassess the patient.
Pulse
No Pulse
Do not resuscitate
Do not transport
Determine Level of Consciousness
A=Alert, V=Responsive to verbal stimuli, P=Responsive to painful stimuli, U=Unresponsive
Assess vital signs and correct evidence of:
Adult evidence of shock:
SBP < 90 mmHg
Weak or absent peripheral pulse
Pediatric evidence of shock:
Signs of external hemorrhage
Altered mental status
Weak or absent peripheral pulse
SBP>70+2 x age up to 8 years
Prevent heat loss
BLS
Control external bleeding with direct pressure or tourniquet
ALS
IV/IO access of NS bolus to maintain perfusion
Complete appropriate secondary physical exam and treat life threatening injuries as found
Assess CSM function, perform spinal immobilization and reassess circulation, sensation and motor function (CSM)
Complete history of event and past medical history using SAMPLE & OPQRST
Treat all non-life threatening injuries as time allows
BLS or ALS transport to appropriate facility

Adult and Pediatric Trauma - Amputated Parts



Adult and Pediatric Trauma - Extremity Fractures, Dislocation and Sprains




Adult and Pediatric Trauma – Head Injury
Assess ABCs, VS, LOC
Spinal immobilization
BLS
Do not delay transport to trauma center while performing the following procedures:
• Airway support and oxygen 15 lpm via NRM
• Manage ventilation at 10 breaths/min (or at an age appropriate rate for pediatrics)
• Treat injuries as indicated
• Do not remove any impaled object
BLS transport to appropriate facility
ALS
Follow BLS standards
Secure airway
• Manage ventilation to maintain SPO2≥95% (or at an age appropriate rate for pediatrics)
• Monitor and maintain EtCO2 between 35-45 mmHg if available (or at an age appropriate rate for pediatrics)
Adult: Administer IV NS to SBP >100 mmHg
Ped: IV/IO access NS bolus age appropriate
ALS transport to appropriate facility

Adult and Pediatric Trauma – Patient Identification and Field Triage Decision Scheme

Measure vital signs and level of consciousness

STEP ONE

Glasgow Coma Scale	<14 or
Systolic blood pressure	<90 or mmHg
Respiratory rate	<10 or >29 breaths per minute (<20 in infant < one year[1])

Yes → Transport to a Trauma Center[2]. Steps 1 & 2 attempt to identify the most seriously injured patients. These patients should be transported preferentially to the highest level of care within the trauma system.

No → Assess anatomy of injury.

STEP TWO[3]

- All penetrating injuries to head, neck, torso, and extremities proximal to elbow & knee
- Flail chest
- Two or more proximal long-bone fractures
- Crush, de-gloved or mangle extremity
- Amputation proximal to wrist and ankle
- Pelvic fractures
- Open or depressed skull fracture
- Paralysis

Yes → Transport to a Trauma Center[2]. Steps 1 & 2 attempt to identify the most seriously injured patients. These patients should be transported preferentially to the highest level of care within the trauma system.

No → Assess mechanism of injury & evidence of high-energy impact.

STEP THREE[3]

- Falls
  - Adults > 20ft. (one story is equal to 10 ft.)
  - Children[4] > 10 ft. or 2-3 times the height of the child
- High-risk auto crash
  - Intrusion[5] >12 in. occupant site; > 18 in. any site
  - Ejection (partial or complete) from automobile
  - Death in same passenger compartment
  - Vehicle telemetry data consistent with high risk of injury
- Auto v. pedestrian/bicyclist thrown, run over, or with significant (> 20 mph) impact[6]
- Motorcycle crash > 20 mph

Yes → Transport to closest appropriate Trauma Center[7] which, depending on the trauma system, need not be the highest level trauma center.

No → Assess special patient or system considerations.

STEP FOUR

- Age
  - Older Adults[8]: Risk of injury/death increases after age 55 years
  - Children: Should be triaged preferentially to pediatric-capable trauma centers
- Anticoagulation and bleeding disorders
- Burns
  - Without other trauma mechanism; Triage to burn facility[9]
  - With trauma mechanism: Triage to trauma center
- Time sensitive extremity injury[10]
- End-stage renal disease requiring dialysis
- Pregnancy > 20 weeks
- EMS[11] provider judgment

Yes → Contact medical control and consider transport to trauma center or specific resource hospital[13].

No → Transport according to protocol[12].

WHEN IN DOUBT, TRANSPORT TO A TRAUMA CENTER.

Adopted by the Arizona State Trauma Advisory Board, January 21, 2010

FIELD TRIAGE SCHEME FOOTNOTES

[1] The upper limit of respiratory rate in infants is >29 breathe per minute to maintain a higher level of over-triage for infants.

[2] Trauma centers are designated Level I-IV, with Level I representing the highest level of trauma care available.

[3] Any injury noted in Step Two or Step Three triggers a "YES" response.

[4] Age <15 years

[5] Intrusion refers to interior compartment intrusion, as opposed to deformation which refers to exterior damage.

[6] Includes pedestrians or bicyclists thrown or run over by a motor vehicle or those with estimated impact >20 mph with a motor vehicle.

[7] Local or regional protocols should be used to determine the most appropriate level of trauma center; appropriate center need not be Level I.

[8] Age >55 years.

[9] Patients with both burns and concomitant trauma for whom the burn injury poses the greatest risk for morbidity and mortality should be transferred to a burn center. If the non-burn trauma presents a greater immediate risk, the patient may be stabilized in a trauma center and then transferred to a burn center.

[10] Injuries such as an open fracture or fracture with neurovascular compromise.

[11] Emergency medical services.

[12] Patients who do not meet any of the triage criteria in Steps One through Four should be transported to the most appropriate medical facility as outlined in local EMS protocols.

[13] In most circumstances patients undergoing CPR should not be transported by Air Ambulance.

ARIZONA TRAUMA MODE OF TRANSPORT GUIDELINE

The decision for mode of transport for both field and inter-facility trauma patients is based on the premise that the time to definitive care and quality of care are critical to achieving optimal outcomes. Factors of distance, injury severity, road conditions, and traffic patterns must be considered when choosing between air or ground transport. The skill level of the transport team must also be considered.

When considering air transport, the amount of time saved should be significant enough to allow a potentially beneficial intervention to take place at the receiving facility. Time considerations should take into account arranging for air transport, patient packaging, transport to the aircraft and transport of the patient from the helipad or airport to the trauma bay. The referring physician will collaborate with the receiving physician and transport service providers to determine the appropriate mode of transport, based on the patient's condition, and the above mentioned factors.

The potential benefit to the patient should outweigh the risk associated with Air Ambulance transport.

INTER-FACILITY TRAUMA TRANSPORTS

Background: Trauma transports from one hospital to another for a higher level of care typically fall into one of two broad types:

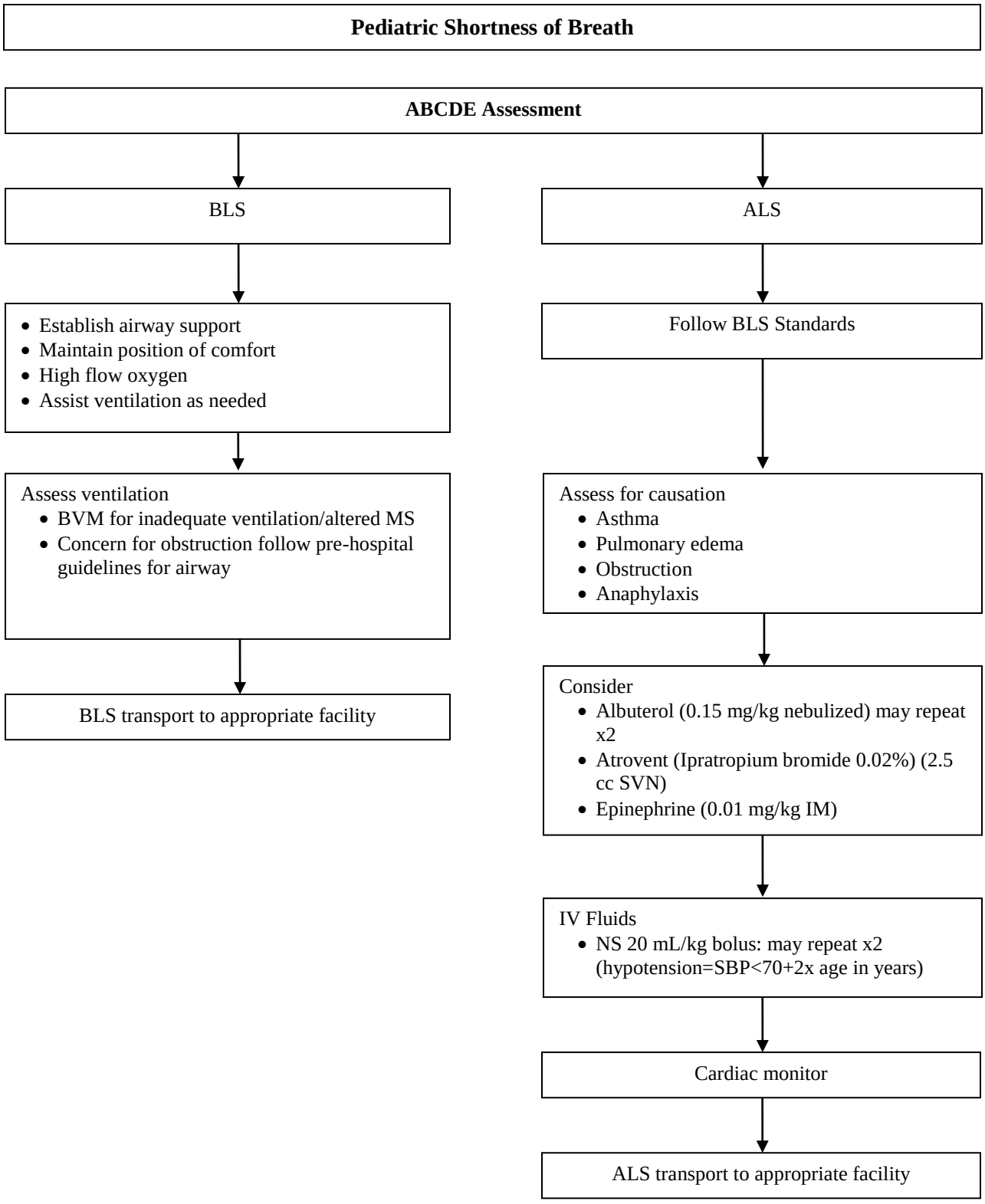
1. Those in which a quicker form of transport may make a difference in treatment/outcome.
2. Those in which a quicker form of transport may not make a difference in treatment/outcome.

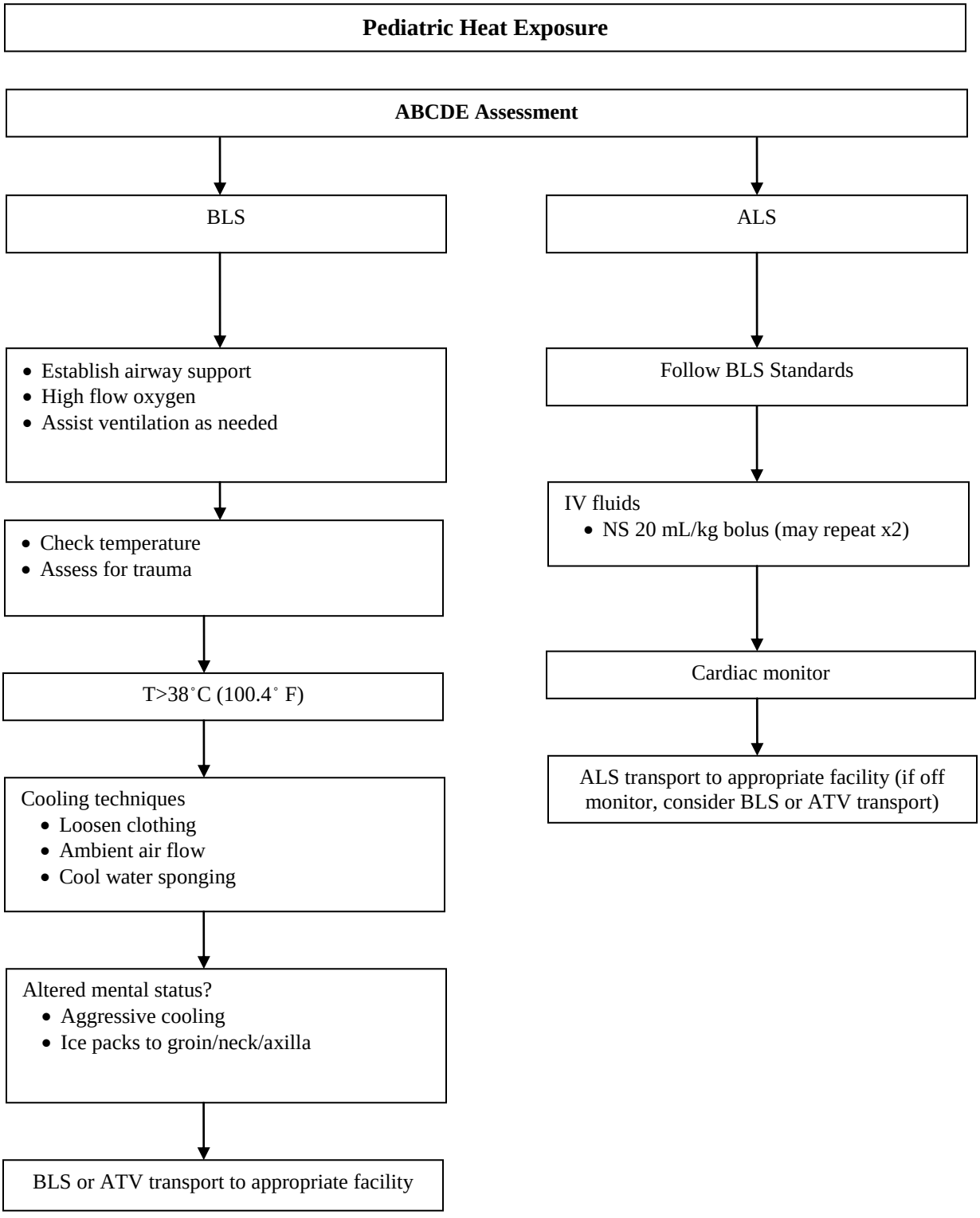
Assumptions: Assumption for the purposes of these examples:

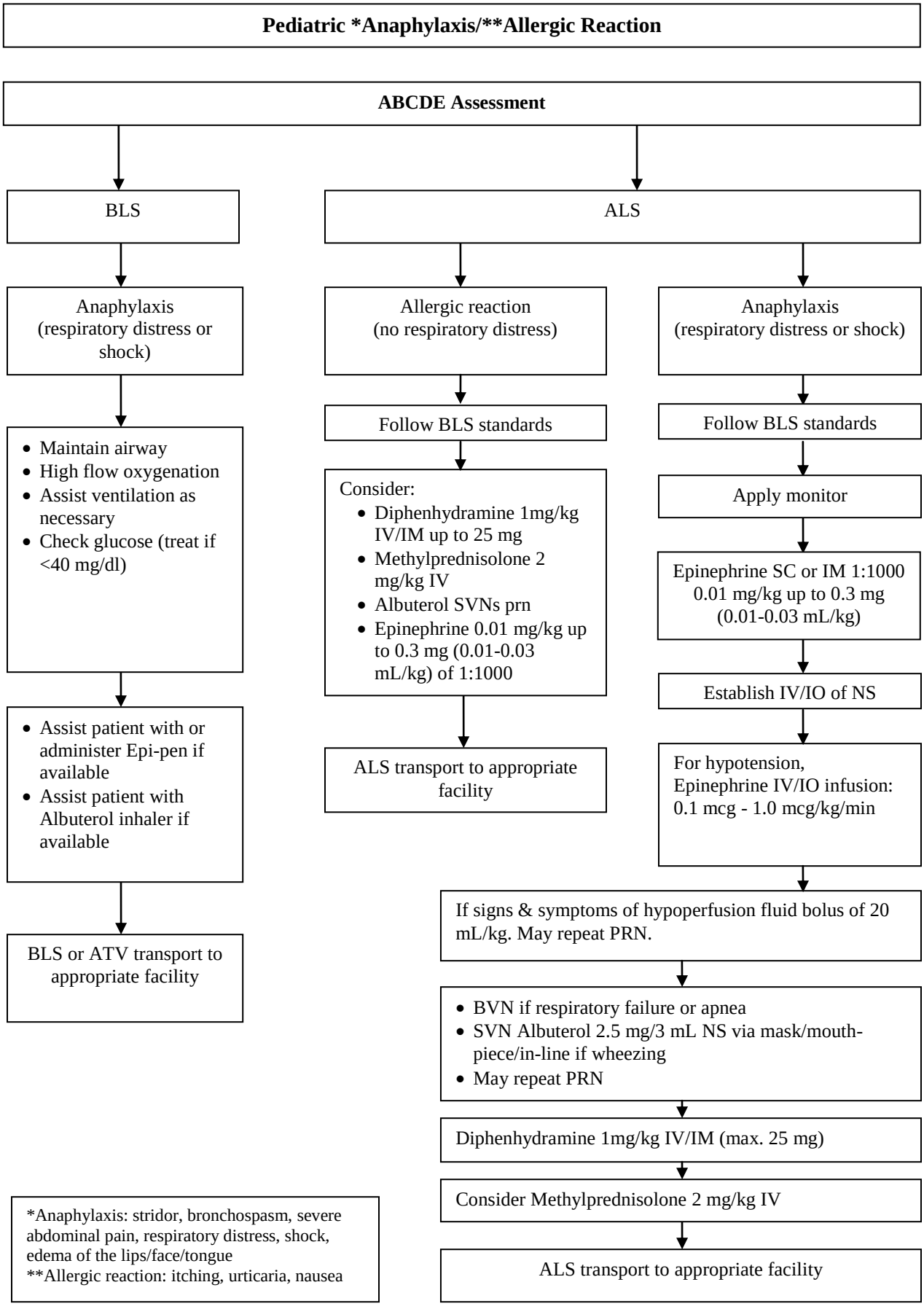
1. Helicopter transport will be quicker, but more expensive.
2. There are no weather or road issues that would make air transport preferable to ground transport or ground transport preferable to air transport.

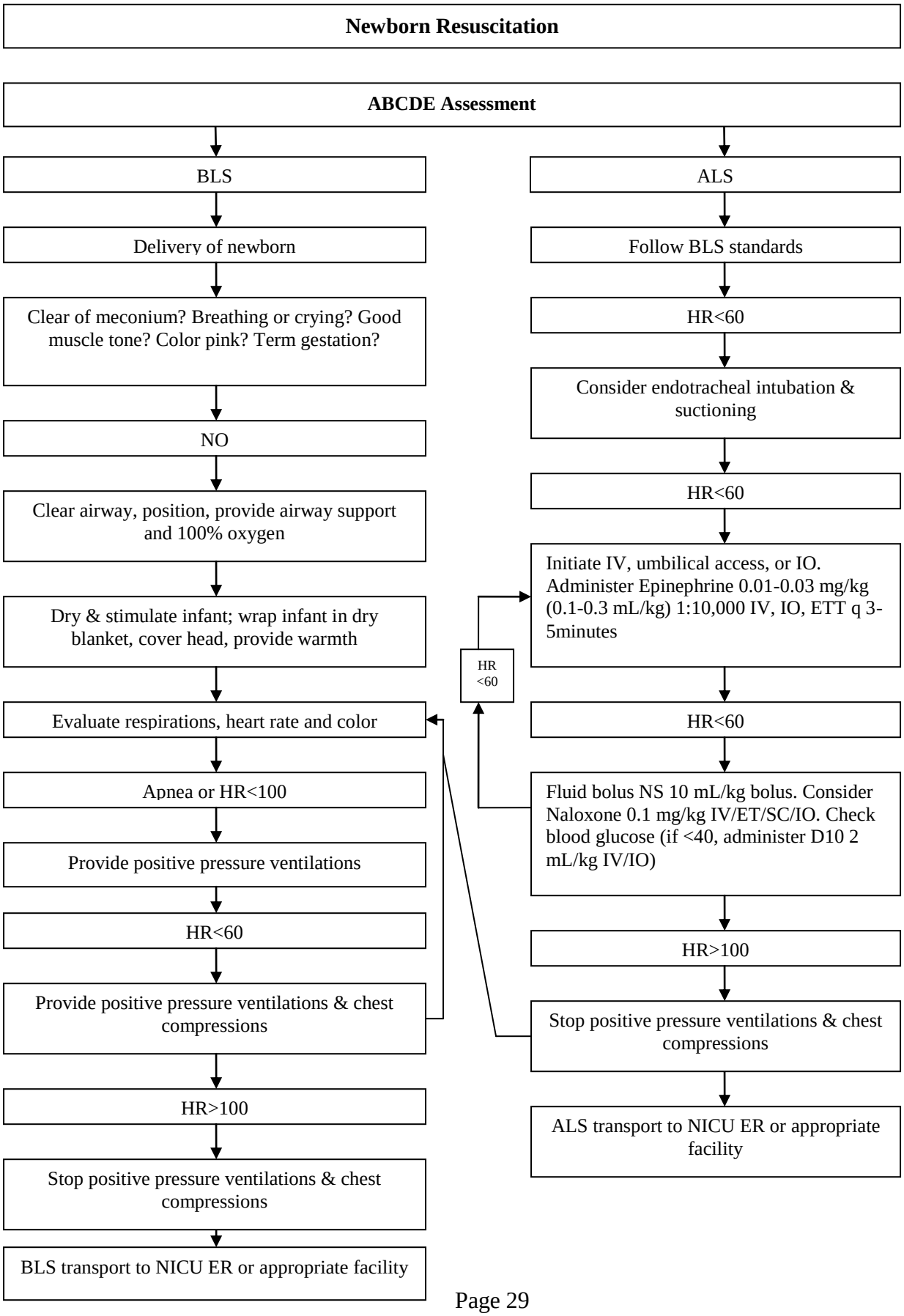
Examples: Not intended to cover all potential circumstances.

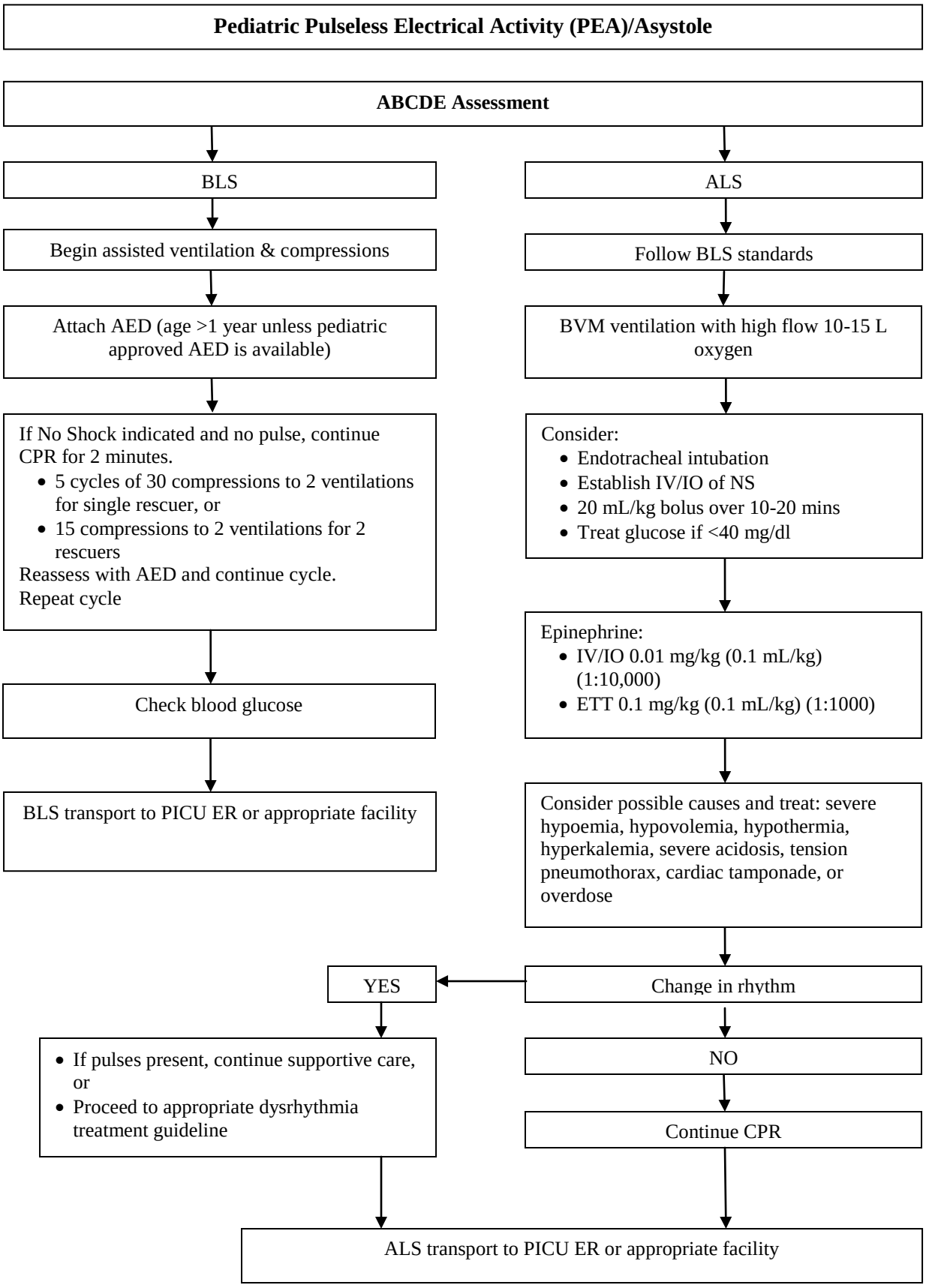
Quicker Form of Transport (Helicopter) - May Make a Difference in Outcome	**Quicker Form of Transport (Helicopter) - May Not Make a Difference in Outcome**
1. Patient with suspected aortic injury as seen on chest X-ray or CT scan.	1. Patient with 2 broken ribs, no pneumothorax and who is breathing fine.
2. Patient with an open book pelvis.	2. Patent with a minor pelvic fracture and hemodynamically stable.
3. Patient with a Glasgow Coma Scale (GCS) less than 12 and the GCS is decreasing.	3. Patient with a concussion and normal CT scan of the brain; or if no CT, then a GCS of 15 and mentating appropriately.
4. Patient with a stab wound to the abdomen near the upper right abdomen.	4. Stab wound to the arm with decreased sensation but normal pluses, no "tightness", and no significant on-going blood loss.
5. Patient with a gun-shot wound to the thigh with decreased pulses.	5. Patent with gun-shot wound to the thigh with excellent pulses, no expanding thigh, and no significant on-going blood loss.
6. Patent with blunt trauma and signs of shock.	

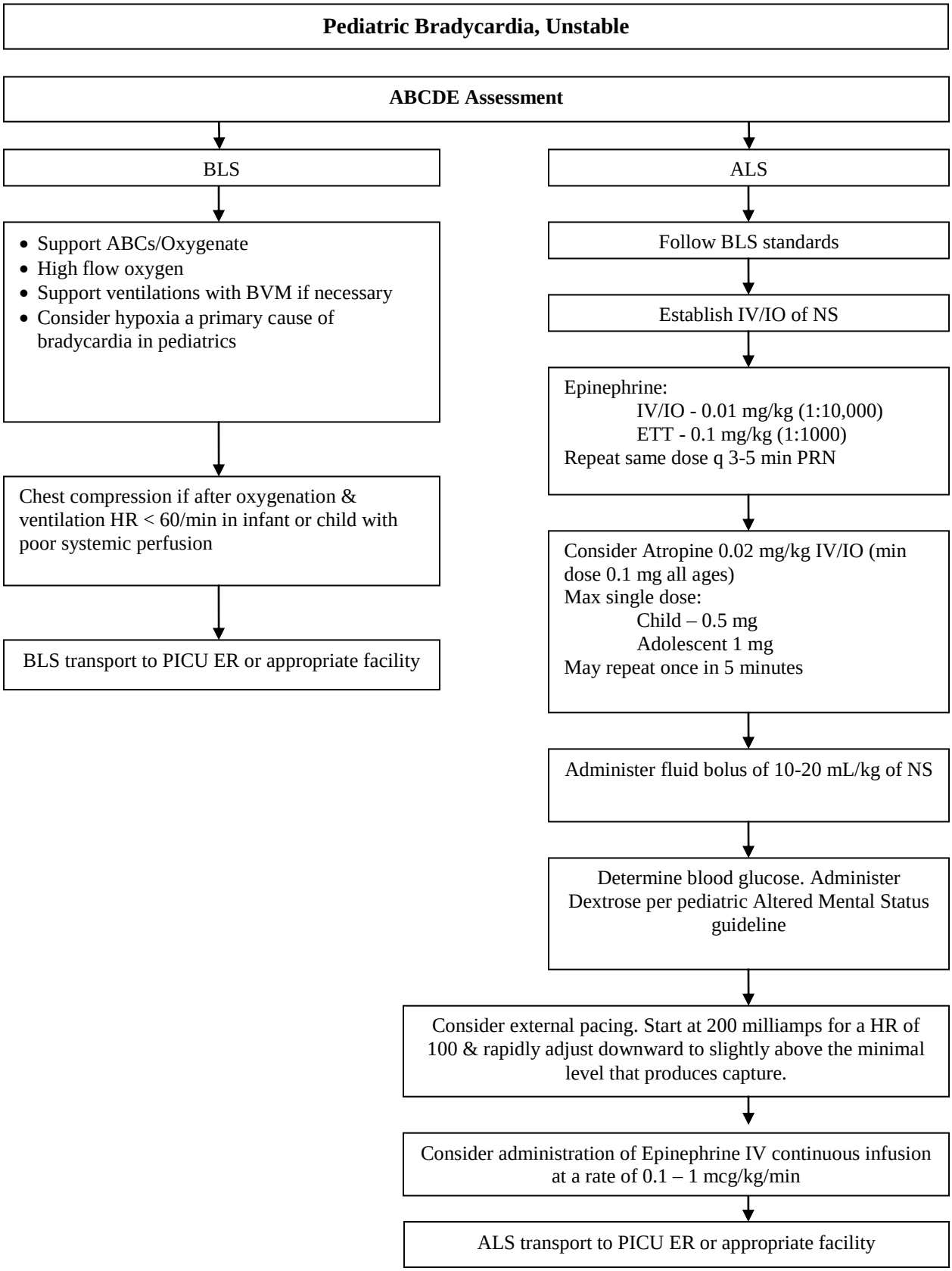

Pediatric Shortness of Breath
ABCDE Assessment
BLS
ALS
• Establish airway support
• Maintain position of comfort
• High flow oxygen
• Assist ventilation as needed
Follow BLS Standards
Assess ventilation
• BVM for inadequate ventilation/altered MS
• Concern for obstruction follow pre-hospital guidelines for airway
Assess for causation
• Asthma
• Pulmonary edema
• Obstruction
• Anaphylaxis
BLS transport to appropriate facility
Consider
• Albuterol (0.15 mg/kg nebulized) may repeat x2
• Atrovent (Ipratropium bromide 0.02%) (2.5 cc SVN)
• Epinephrine (0.01 mg/kg IM)
IV Fluids
• NS 20 mL/kg bolus: may repeat x2 (hypotension=SBP<70+2x age in years)
Cardiac monitor
ALS transport to appropriate facility

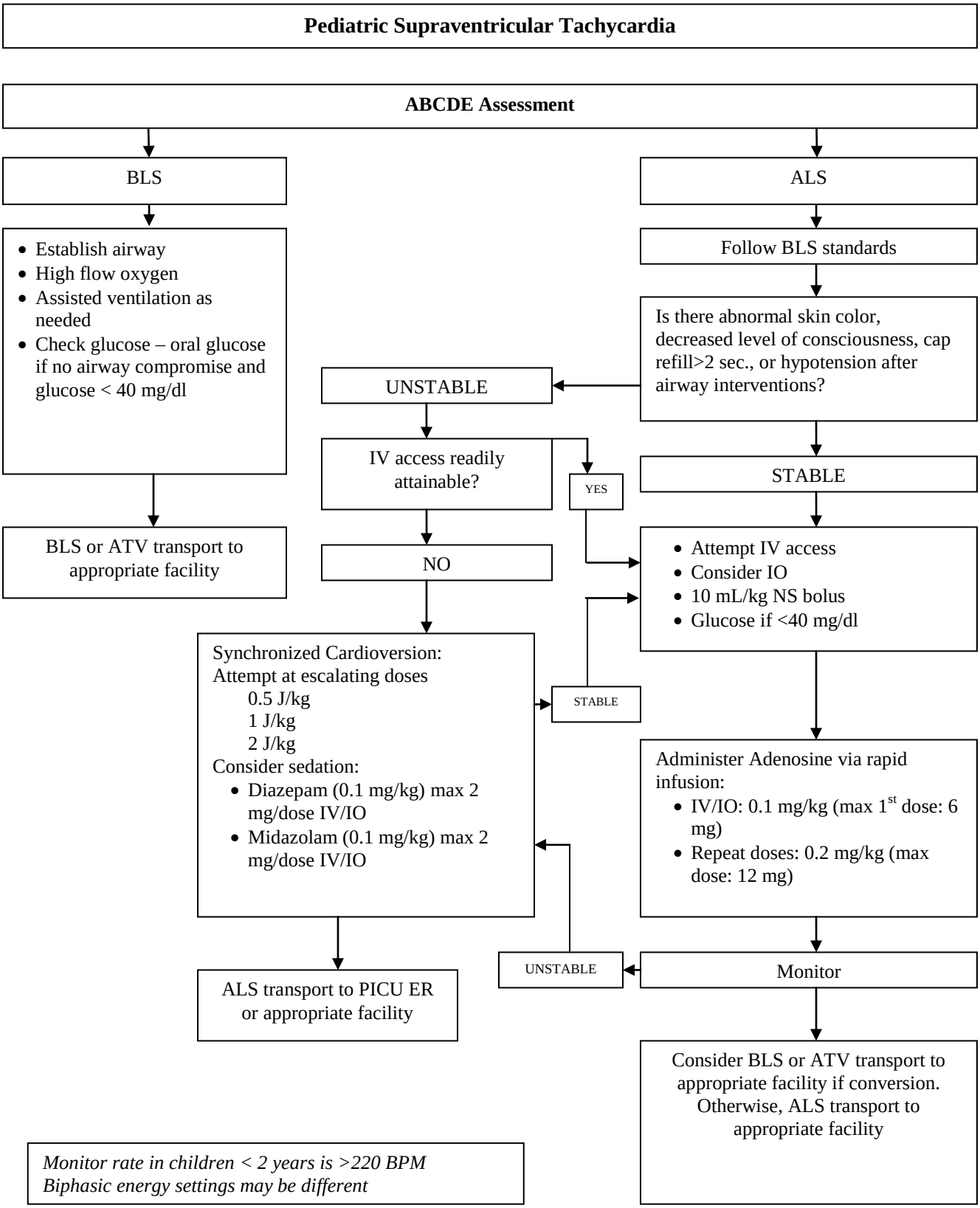

Pediatric Heat Exposure
ABCDE Assessment
BLS
ALS
• Establish airway support
• High flow oxygen
• Assist ventilation as needed
Follow BLS Standards
• Check temperature
• Assess for trauma
IV fluids
• NS 20 mL/kg bolus (may repeat x2)
T>38˚C (100.4˚ F)
Cardiac monitor
Cooling techniques
• Loosen clothing
• Ambient air flow
• Cool water sponging
ALS transport to appropriate facility (if off monitor, consider BLS or ATV transport)
Altered mental status?
• Aggressive cooling
• Ice packs to groin/neck/axilla
BLS or ATV transport to appropriate facility

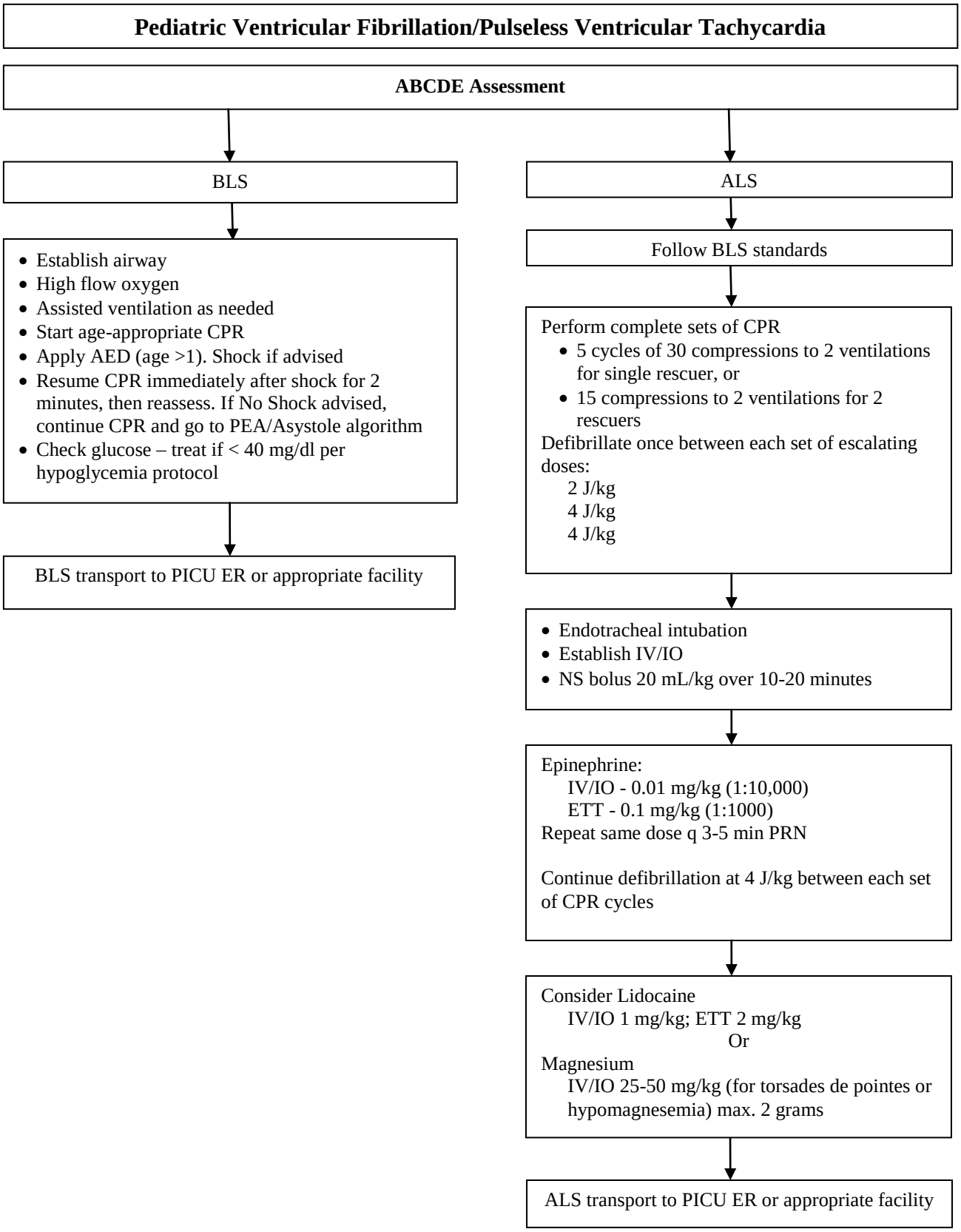

Pediatric *Anaphylaxis/**Allergic Reaction
ABCDE Assessment
BLS
ALS
Anaphylaxis (respiratory distress or shock)
Allergic reaction (no respiratory distress)
Anaphylaxis (respiratory distress or shock)
Follow BLS standards
Follow BLS standards
Maintain airway
High flow oxygenation
Assist ventilation as necessary
Check glucose (treat if <40 mg/dl)
Consider:
Diphenhydramine 1mg/kg IV/IM up to 25 mg
Methylprednisolone 2 mg/kg IV
Albuterol SVNs prn
Epinephrine 0.01 mg/kg up to 0.3 mg (0.01-0.03 mL/kg) of 1:1000
Apply monitor
Epinephrine SC or IM 1:1000 0.01 mg/kg up to 0.3 mg (0.01-0.03 mL/kg)
Establish IV/IO of NS
Assist patient with or administer Epi-pen if available
Assist patient with Albuterol inhaler if available
ALS transport to appropriate facility
For hypotension, Epinephrine IV/IO infusion: 0.1 mcg - 1.0 mcg/kg/min
BLS or ATV transport to appropriate facility
If signs & symptoms of hypoperfusion fluid bolus of 20 mL/kg. May repeat PRN.
BVN if respiratory failure or apnea
SVN Albuterol 2.5 mg/3 mL NS via mask/mouth-piece/in-line if wheezing
May repeat PRN
Diphenhydramine 1mg/kg IV/IM (max. 25 mg)
Consider Methylprednisolone 2 mg/kg IV
ALS transport to appropriate facility
*Anaphylaxis: stridor, bronchospasm, severe abdominal pain, respiratory distress, shock, edema of the lips/face/tongue
**Allergic reaction: itching, urticaria, nausea

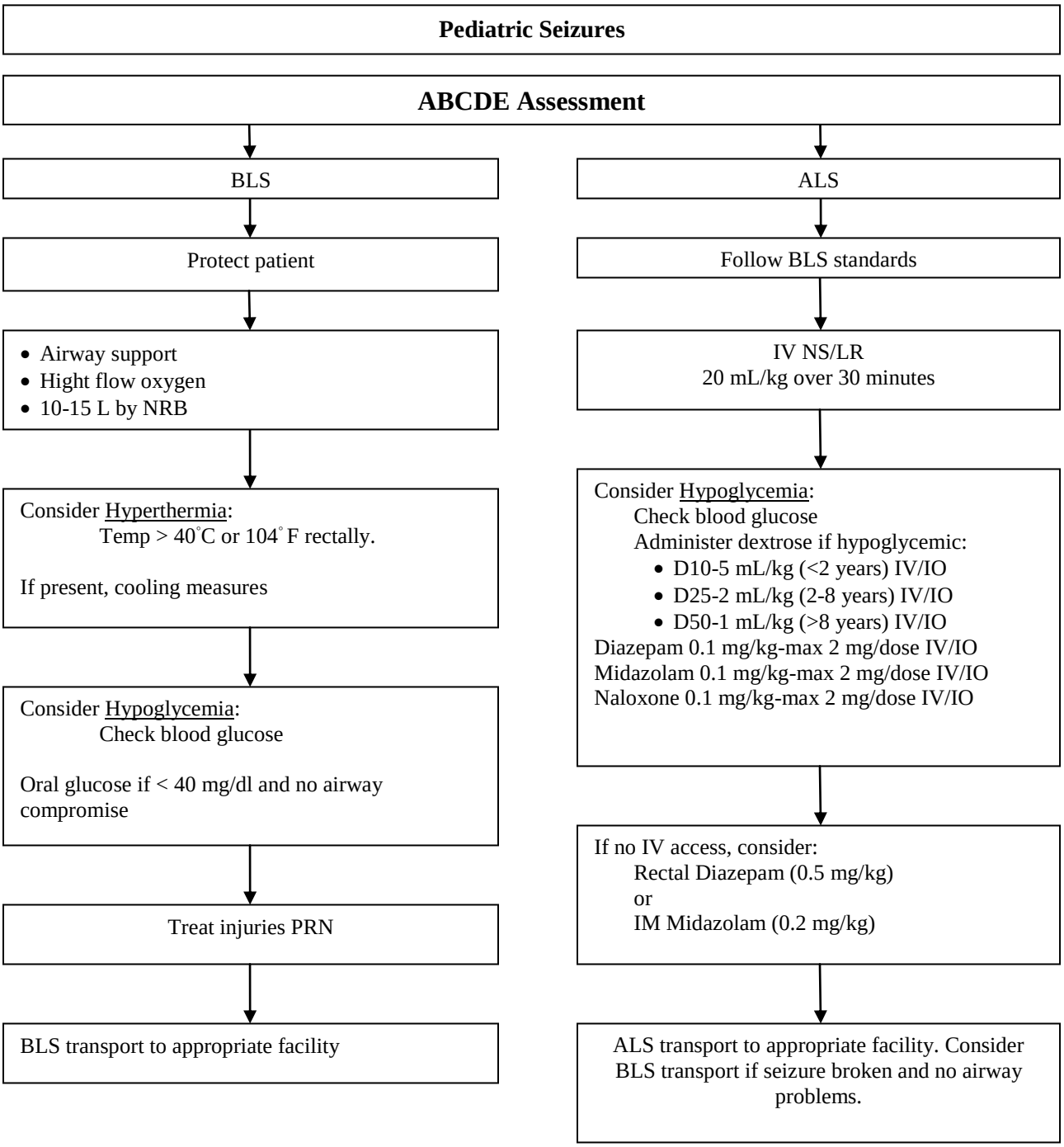

Newborn Resuscitation
ABCDE Assessment
BLS
Delivery of newborn
Clear of meconium? Breathing or crying? Good muscle tone? Color pink? Term gestation?
NO
Clear airway, position, provide airway support and 100% oxygen
Dry & stimulate infant; wrap infant in dry blanket, cover head, provide warmth
Evaluate respirations, heart rate and color
Apnea or HR<100
Provide positive pressure ventilations
HR<60
Provide positive pressure ventilations & chest compressions
HR>100
Stop positive pressure ventilations & chest compressions
BLS transport to NICU ER or appropriate facility
ALS
Follow BLS standards
HR<60
Consider endotracheal intubation & suctioning
HR<60
Initiate IV, umbilical access, or IO. Administer Epinephrine 0.01-0.03 mg/kg (0.1-0.3 mL/kg) 1:10,000 IV, IO, ETT q 3-5minutes
HR<60
Fluid bolus NS 10 mL/kg bolus. Consider Naloxone 0.1 mg/kg IV/ET/SC/IO. Check blood glucose (if <40, administer D10 2 mL/kg IV/IO)
HR>100
Stop positive pressure ventilations & chest compressions
ALS transport to NICU ER or appropriate facility
HR <60

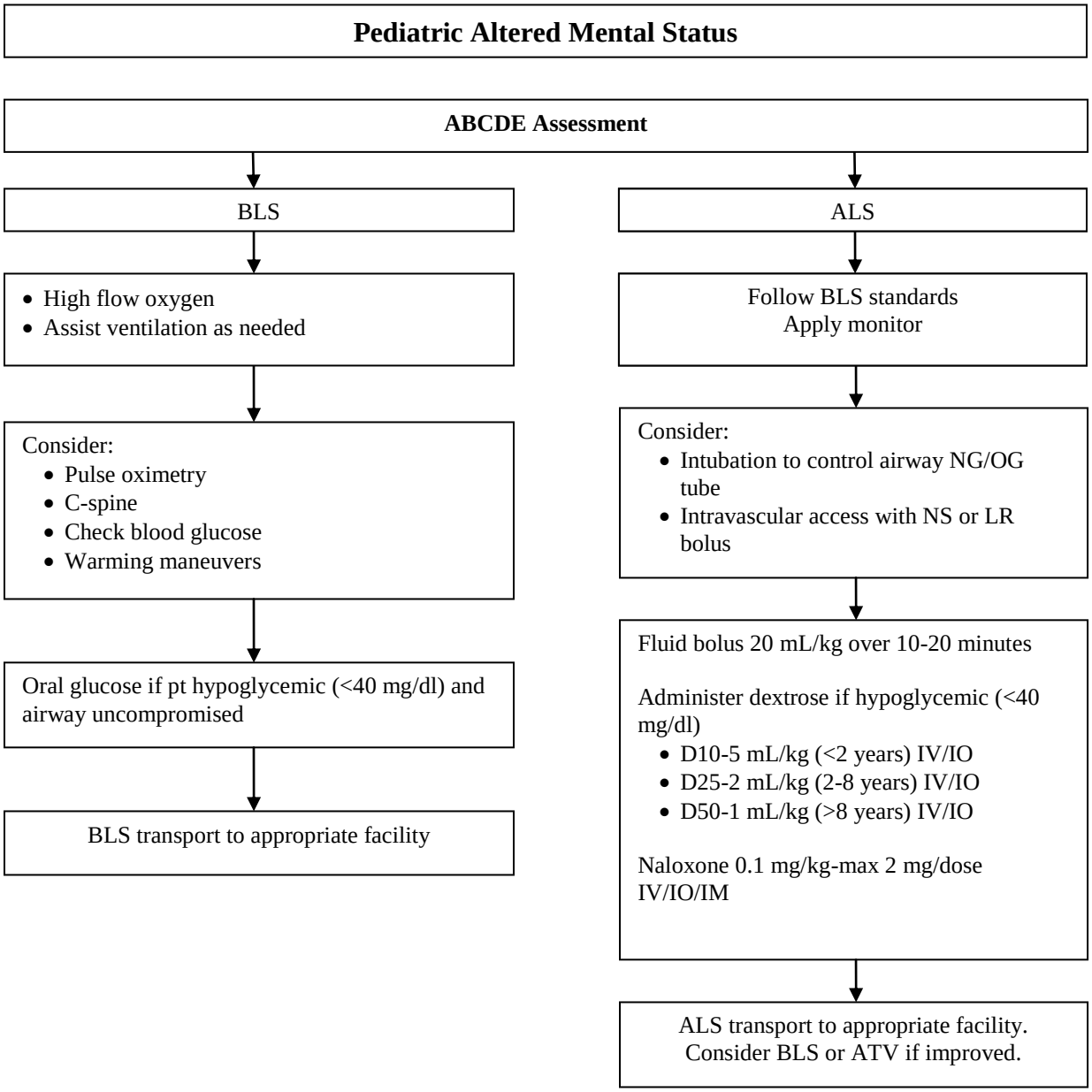

Pediatric Pulseless Electrical Activity (PEA)/Asystole
ABCDE Assessment
BLS
Begin assisted ventilation & compressions
Attach AED (age >1 year unless pediatric approved AED is available)
If No Shock indicated and no pulse, continue CPR for 2 minutes.
5 cycles of 30 compressions to 2 ventilations for single rescuer, or
15 compressions to 2 ventilations for 2 rescuers
Reassess with AED and continue cycle.
Repeat cycle
Check blood glucose
BLS transport to PICU ER or appropriate facility
ALS
Follow BLS standards
BVM ventilation with high flow 10-15 L oxygen
Consider:
Endotracheal intubation
Establish IV/IO of NS
20 mL/kg bolus over 10-20 mins
Treat glucose if <40 mg/dl
Epinephrine:
IV/IO 0.01 mg/kg (0.1 mL/kg) (1:10,000)
ETT 0.1 mg/kg (0.1 mL/kg) (1:1000)
Consider possible causes and treat: severe hypoemia, hypovolemia, hypothermia, hyperkalemia, severe acidosis, tension pneumothorax, cardiac tamponade, or overdose
Change in rhythm
YES
If pulses present, continue supportive care, or
Proceed to appropriate dysrhythmia treatment guideline
NO
Continue CPR
ALS transport to PICU ER or appropriate facility

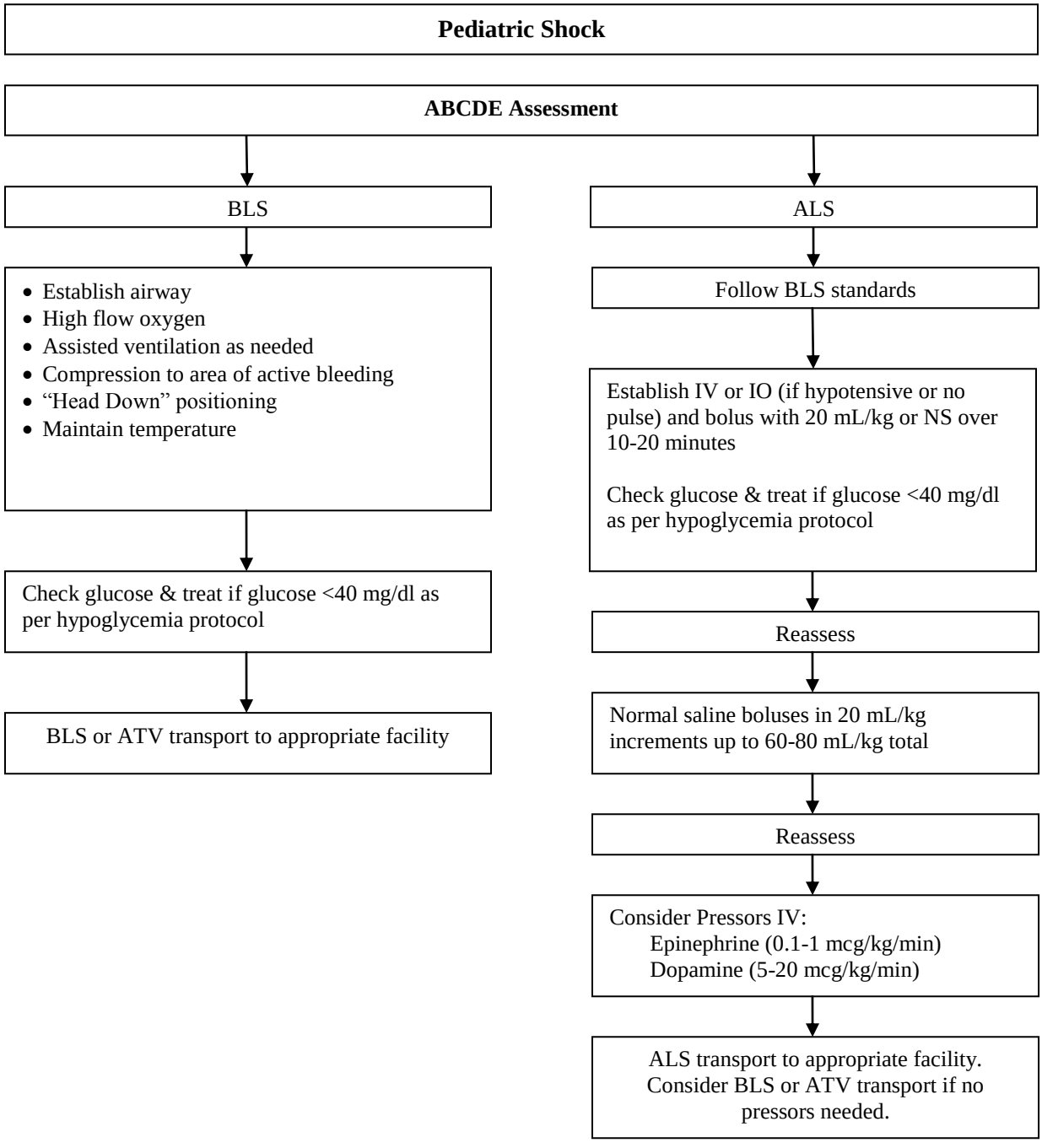

Pediatric Bradycardia, Unstable
ABCDE Assessment
BLS
• Support ABCs/Oxygenate
• High flow oxygen
• Support ventilations with BVM if necessary
• Consider hypoxia a primary cause of bradycardia in pediatrics
Chest compression if after oxygenation & ventilation HR < 60/min in infant or child with poor systemic perfusion
BLS transport to PICU ER or appropriate facility
ALS
Follow BLS standards
Establish IV/IO of NS
Epinephrine:
IV/IO - 0.01 mg/kg (1:10,000)
ETT - 0.1 mg/kg (1:1000)
Repeat same dose q 3-5 min PRN
Consider Atropine 0.02 mg/kg IV/IO (min dose 0.1 mg all ages)
Max single dose:
Child – 0.5 mg
Adolescent 1 mg
May repeat once in 5 minutes
Administer fluid bolus of 10-20 mL/kg of NS
Determine blood glucose. Administer Dextrose per pediatric Altered Mental Status guideline
Consider external pacing. Start at 200 milliamps for a HR of 100 & rapidly adjust downward to slightly above the minimal level that produces capture.
Consider administration of Epinephrine IV continuous infusion at a rate of 0.1 – 1 mcg/kg/min
ALS transport to PICU ER or appropriate facility

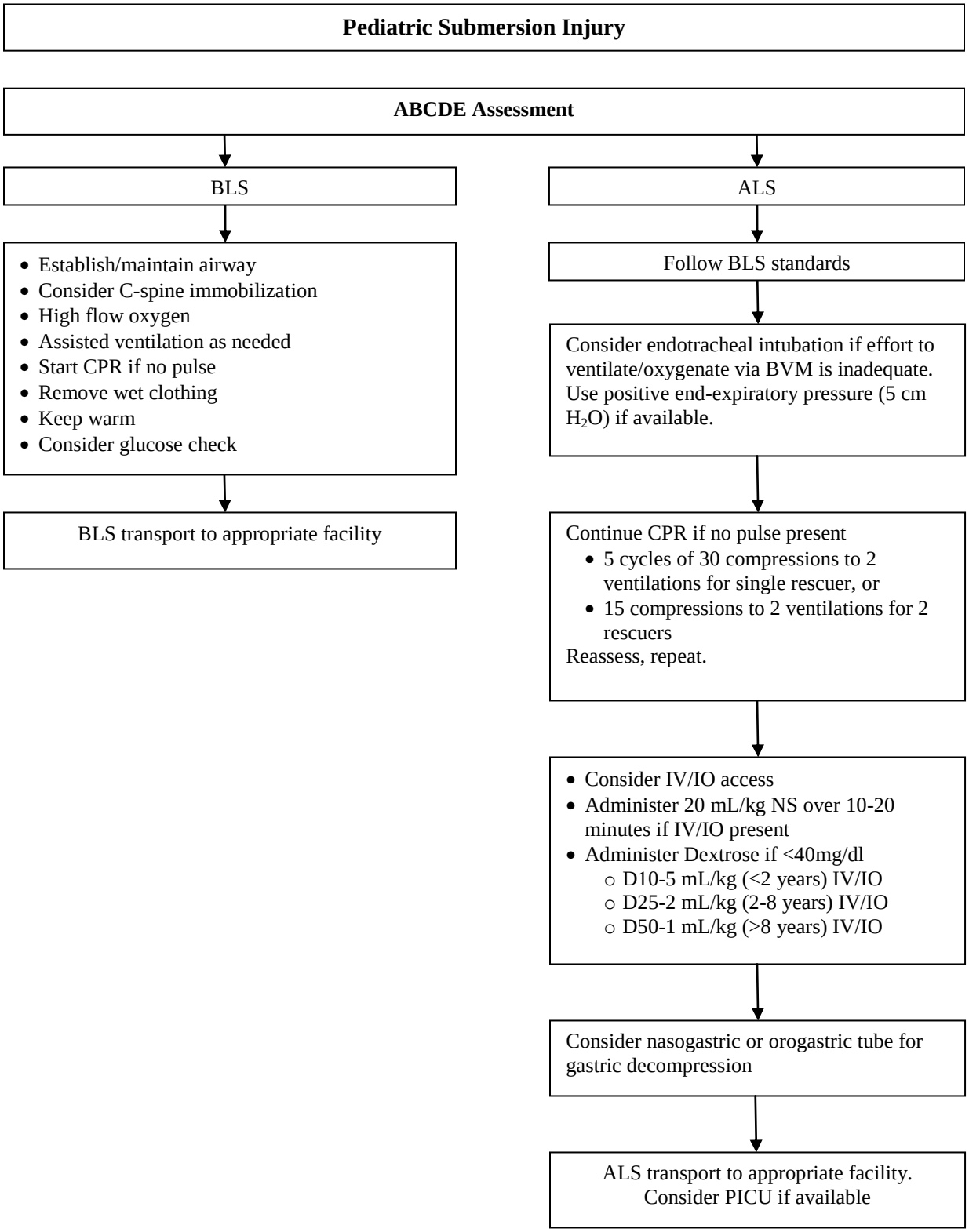

Pediatric Supraventricular Tachycardia
ABCDE Assessment
BLS
ALS
• Establish airway
• High flow oxygen
• Assisted ventilation as needed
• Check glucose – oral glucose if no airway compromise and glucose < 40 mg/dl
Follow BLS standards
Is there abnormal skin color, decreased level of consciousness, cap refill>2 sec., or hypotension after airway interventions?
UNSTABLE
STABLE
IV access readily attainable?
YES
NO
BLS or ATV transport to appropriate facility
• Attempt IV access
• Consider IO
• 10 mL/kg NS bolus
• Glucose if <40 mg/dl
Synchronized Cardioversion:
Attempt at escalating doses
0.5 J/kg
1 J/kg
2 J/kg
Consider sedation:
• Diazepam (0.1 mg/kg) max 2 mg/dose IV/IO
• Midazolam (0.1 mg/kg) max 2 mg/dose IV/IO
STABLE
Administer Adenosine via rapid infusion:
• IV/IO: 0.1 mg/kg (max 1st dose: 6 mg)
• Repeat doses: 0.2 mg/kg (max dose: 12 mg)
UNSTABLE
Monitor
ALS transport to PICU ER or appropriate facility
Consider BLS or ATV transport to appropriate facility if conversion. Otherwise, ALS transport to appropriate facility
Monitor rate in children < 2 years is >220 BPM
Biphasic energy settings may be different


Pediatric Ventricular Fibrillation/Pulseless Ventricular Tachycardia
ABCDE Assessment
BLS
ALS
• Establish airway
• High flow oxygen
• Assisted ventilation as needed
• Start age-appropriate CPR
• Apply AED (age >1). Shock if advised
• Resume CPR immediately after shock for 2 minutes, then reassess. If No Shock advised, continue CPR and go to PEA/Asystole algorithm
• Check glucose – treat if < 40 mg/dl per hypoglycemia protocol
BLS transport to PICU ER or appropriate facility
Follow BLS standards
Perform complete sets of CPR
• 5 cycles of 30 compressions to 2 ventilations for single rescuer, or
• 15 compressions to 2 ventilations for 2 rescuers
Defibrillate once between each set of escalating doses:
2 J/kg
4 J/kg
4 J/kg
• Endotracheal intubation
• Establish IV/IO
• NS bolus 20 mL/kg over 10-20 minutes
Epinephrine:
IV/IO - 0.01 mg/kg (1:10,000)
ETT - 0.1 mg/kg (1:1000)
Repeat same dose q 3-5 min PRN
Continue defibrillation at 4 J/kg between each set of CPR cycles
Consider Lidocaine
IV/IO 1 mg/kg; ETT 2 mg/kg
Or
Magnesium
IV/IO 25-50 mg/kg (for torsades de pointes or hypomagnesemia) max. 2 grams
ALS transport to PICU ER or appropriate facility


Pediatric Seizures
ABCDE Assessment
BLS
Protect patient
• Airway support
• Hight flow oxygen
• 10-15 L by NRB
Consider Hyperthermia:
Temp > 40˚C or 104˚ F rectally.
If present, cooling measures
Consider Hypoglycemia:
Check blood glucose
Oral glucose if < 40 mg/dl and no airway compromise
Treat injuries PRN
BLS transport to appropriate facility
ALS
Follow BLS standards
IV NS/LR
20 mL/kg over 30 minutes
Consider Hypoglycemia:
Check blood glucose
Administer dextrose if hypoglycemic:
• D10-5 mL/kg (<2 years) IV/IO
• D25-2 mL/kg (2-8 years) IV/IO
• D50-1 mL/kg (>8 years) IV/IO
Diazepam 0.1 mg/kg-max 2 mg/dose IV/IO
Midazolam 0.1 mg/kg-max 2 mg/dose IV/IO
Naloxone 0.1 mg/kg-max 2 mg/dose IV/IO
If no IV access, consider:
Rectal Diazepam (0.5 mg/kg)
or
IM Midazolam (0.2 mg/kg)
ALS transport to appropriate facility. Consider BLS transport if seizure broken and no airway problems.


Pediatric Altered Mental Status
ABCDE Assessment
BLS
ALS
• High flow oxygen
• Assist ventilation as needed
Follow BLS standards
Apply monitor
Consider:
• Pulse oximetry
• C-spine
• Check blood glucose
• Warming maneuvers
Consider:
• Intubation to control airway NG/OG tube
• Intravascular access with NS or LR bolus
Oral glucose if pt hypoglycemic (<40 mg/dl) and airway uncompromised
Fluid bolus 20 mL/kg over 10-20 minutes
Administer dextrose if hypoglycemic (<40 mg/dl)
• D10-5 mL/kg (<2 years) IV/IO
• D25-2 mL/kg (2-8 years) IV/IO
• D50-1 mL/kg (>8 years) IV/IO
Naloxone 0.1 mg/kg-max 2 mg/dose IV/IO/IM
BLS transport to appropriate facility
ALS transport to appropriate facility.
Consider BLS or ATV if improved.


Pediatric Shock
ABCDE Assessment
BLS
ALS
• Establish airway
• High flow oxygen
• Assisted ventilation as needed
• Compression to area of active bleeding
• "Head Down" positioning
• Maintain temperature
Check glucose & treat if glucose <40 mg/dl as per hypoglycemia protocol
BLS or ATV transport to appropriate facility
Follow BLS standards
Establish IV or IO (if hypotensive or no pulse) and bolus with 20 mL/kg or NS over 10-20 minutes
Check glucose & treat if glucose <40 mg/dl as per hypoglycemia protocol
Reassess
Normal saline boluses in 20 mL/kg increments up to 60-80 mL/kg total
Reassess
Consider Pressors IV:
Epinephrine (0.1-1 mcg/kg/min)
Dopamine (5-20 mcg/kg/min)
ALS transport to appropriate facility. Consider BLS or ATV transport if no pressors needed.


Pediatric Submersion Injury
ABCDE Assessment
BLS
ALS
• Establish/maintain airway
• Consider C-spine immobilization
• High flow oxygen
• Assisted ventilation as needed
• Start CPR if no pulse
• Remove wet clothing
• Keep warm
• Consider glucose check
BLS transport to appropriate facility
Follow BLS standards
Consider endotracheal intubation if effort to ventilate/oxygenate via BVM is inadequate. Use positive end-expiratory pressure (5 cm H_2O) if available.
Continue CPR if no pulse present
• 5 cycles of 30 compressions to 2 ventilations for single rescuer, or
• 15 compressions to 2 ventilations for 2 rescuers
Reassess, repeat.
• Consider IV/IO access
• Administer 20 mL/kg NS over 10-20 minutes if IV/IO present
• Administer Dextrose if <40mg/dl
○ D10-5 mL/kg (<2 years) IV/IO
○ D25-2 mL/kg (2-8 years) IV/IO
○ D50-1 mL/kg (>8 years) IV/IO
Consider nasogastric or orogastric tube for gastric decompression
ALS transport to appropriate facility. Consider PICU if available

GLOSSARY

ABCDE	Airway, Breathing, Circulation, Disability and Exposure
ACLS	Advanced Cardiac Life Support
AED	Automated External Defibrillator
ALOC	Altered level of consciousness
ALS	Advanced Life Support
ATV	Alternate Transport Vehicle
BCLS	Basic Cardiac Life Support
BLS	Basic Life Support
BVM	Bag Valve Mask
CCR	Cardiocerebral Resuscitation
CPAP	Continuous Positive Airway Pressure
CPR	Cardiopulmonary Resuscitation
CRC	Cardiac Receiving/Referral Center
DNR	Do Not Resuscitate
ECG	Electrocardiogram
EMS	Emergency Medical Services
FSBS	Fingerstick Blood Sugar
GCS	Glasgow Coma Scale
IO	Intraosseous
IV	Intravenous
IVP	Intravenous Push
LOC	Level of Consciousness
LR	Lactated Ringers
NS	Normal Saline
NTG	Nitroglycerin
OHCA	Out of Hospital Cardiac Arrest
OPA	Oropharyngeal Airway
PEA	Pulseless Electric Activity
PICU ER	Pediatric ICU with Emergency Room
PO	By Mouth
PRN	As Needed
ROSC	Restoration of Spontaneous Circulation
SL	Sublingual
SVT	Supraventricular Tachycardia
TKO	To Keep (Venous Infusion Line) Open
VF	Ventricular Fibrillation
VT	Ventricular Tachycardia
VS	Vital Signs